Envision

EX5000
Multi-Function Display
Pilot's Guide

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AVIDYNE

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System Configuration

When contacting your dealer or Avidyne technical support, and when logging onto MyAvidyne.com for the first time, please have your Envision EX5000 serial number and Subscriber Communicator serial number available:

EnvisionEX5000 S/N: _____

Datalink Subscriber Communicator S/N: _____

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About this Guide

This guide assumes that all available sensors and software options have been installed in your airplane. The page layouts and button descriptions in this guide may differ slightly from what you observe on your EX5000. If your system is configured with a partial set of the available sensors, then some views may differ from this guide.

Note: All images contained within this document, including screenshots and other displays, are for reference use only and are subject to change. The images contained herein may differ slightly from your actual equipment or display.

Notes and Warnings

Notes and warnings provide guidance for the use of the EX5000. Avidyne strongly suggests that you pay close attention to notes and warnings for your own safety.
For example:

Note: Notes provide useful information about how to use the EX5000.

Warnings are prefaced with exclamation points and denote information that can prevent serious injury or death on the part of the user.

The instructions and warnings in this manual are not intended to replace the instructions and warnings for other equipment on your aircraft. It is critical that you as the pilot in command have a complete understanding of the warnings, operating instructions, and limitations for all equipment installed on your aircraft.

This manual assumes that the reader is an appropriately licensed pilot. Avidyne strongly recommends that you use the EX5000 only under VFR conditions until you are very familiar with the EX5000.

If you have questions, please contact Avidyne at **800-284-3963 (800-AVIDYNE)** before operating with the EX5000 under IFR conditions.

Before conducting flight operations, be sure to verify that time and date settings on the System Time Setup Page are correct and in GMT (UTC). It is critical that the time be set to GMT to provide accurate display of Datalink weather. See Section 7.1, "Aux Main Page" on page 55 for more information.

When using the EX5000, be sure to cross-check the data displayed against other data sources for accuracy including other flight deck instruments and charts.

The displayed terrain and obstacle indicators are only advisory. Do not rely on the EX5000 as the sole source of obstacle and terrain avoidance information. Always refer to current aeronautical charts for appropriate terrain and obstacle information.

The EX5000 is not intended to replace your navigation charts or primary navigation aids. Use the EX5000 as a supplement to other navigation sources, to enhance your overall situational awareness. Do not rely on the navigation data in your EX5000 as your sole reference for navigation.

While a properly updated database contains the latest official information available, the manufacturers will not be held responsible for any inaccuracy or omissions therein. **Never** use the terrain displayed on the EX5000 as the only reference for terrain avoidance.

The transmission of datalink weather information means there is some delay from real time until the weather information is displayed on the EX5000. Therefore, use datalink weather information only for strategic route planning. Avoid severe weather areas with a safe margin of distance. Do not use the EX5000 to penetrate severe weather, thunderstorms, cells or lines of cells.

By using Broadcast datalink, you can access weather information made available from sources external to Avidyne Corporation. Avidyne does not control, edit or review the content of such information and is not responsible for such information or the actions or conduct of any company that provides sources of weather data through the Broadcast datalink. Therefore, ALL WEATHER DATA ARE PROVIDED AS-IS and neither Avidyne nor its suppliers, subcontractors, or developers (collectively called “Suppliers”) are responsible for: 1) the accuracy, completeness, timeliness, reliability, content, or availability of the weather data or any other datalink information accessed; 2) loss or damage to your records or data; or 3) your use of, or results achieved from, the weather data or any other information accessed.

Notice regarding NOTAM information

NOTAM information is subject to constant change and it is extremely important that all pilots check with Flight Service for applicable NOTAMs prior to EVERY flight. Call 1-800-WXBRIEF (992-7433) for the latest information.

The NOTAM information provided by the EX5000 is for planning purposes only. Always consult official NOTAMS for the latest restrictions.

Avidyne does not provide a complete list of NOTAMS. Local NOTAMS, most laser light NOTAMS, and any NOTAMS other than restricted airspace are not listed.

By using the Avidyne Services you are able to access information made available from a variety of sources. Avidyne does not control, edit or review the content of such information and is not responsible for such information or the actions or conduct of any company that provides sources of weather data procured by Avidyne. Therefore, although Avidyne uses diligent efforts to provide Services of high quality, ALL SERVICES AND WEATHER DATA ARE PROVIDED AS-IS and neither Avidyne nor its suppliers (including ORBCOMM and its affiliates), subcontractors, information sources or developers (collectively called “Suppliers”) are responsible for: 1) the accuracy, completeness, timeliness, reliability, content, or availability of the Services or any information accessed; 2) loss or damage to your records or data; or 3) your use of, or results achieved from, the Services or any information accessed.

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Table of Contents

1 Introduction 1
Using the Envision EX5000 MFD 2
Power Up 4
2 Map Page 7
Map Page—Controls 8
Map Page Symbols—Terrain and Position 12
Map Page Symbols – Weather 15
Map Page Symbols—Runways and Flight Plan 17
Map Orientation Control 18
Errors Displayed on the Map Page 19
Loss of GPS Input 19
Loss of Heading Input 19
3 Traffic Mode and the Traffic Page 21
The Dedicated Traffic Page 21
Traffic Symbols 24
TIS Sensor Status 25
4 CMax Chart Pages (Optional) 27
About CMax 27
About Geo-Referenced Charts 28
CMax Chart Page 28
CMax Views 33
Procedure Chart Views 33
Airport Chart Views 35
CMax Selection Page 37
Selecting an Airport 39
Chart NOTAMs Page 41
5 Trip Page 43
6 Nearest Page (NRST) 51
Nearest Page 51
Airport Info Page 53
7 Aux Page – Configuring the EX5000 55
Aux Main Page 55
Airport Filter Setup Page 57
Declutter Setup Page 59
Data Block Edit Page 61
System Time Page 63
Datalink Configuration Page 65

8 Using Datalink (Optional) 69
About Datalink Services 69
Overview of Datalink Weather 71
About Narrowcast Datalink (Optional) 73
Setting up a Narrowcast Account 73
Flight Tracking 73
Using Narrowcast Datalink in Flight 74
Loss of Satellite Coverage 74
About Broadcast Datalink 76
Setting up a Broadcast Datalink Account 76
Using Broadcast Datalink in Flight 76
About Broadcast Datalink Weather 76
How the MFD Handles Partially Missing WSI Messages 77
Map Page with Datalink Weather 78
Symbols Displayed using Datalink 80
Using Datalink without a Traffic Sensor 82
Trip Page with Datalink Weather 83
Nearest Page with Datalink Weather 84
About Multilink (Optional) 85
Using Multilink 85
Setting up a Multilink Account 85
Using Multilink Features 86
Viewing Multilink Data 86
Optimizing your Multilink Setup 89
Multilink Usage Guidelines 90
Datalink Messaging (Optional) 91
Messaging Knobs and Buttons 92
Using Datalink Messaging 94
9 Reference 97
Updating Your Databases 98
Loading NavData (the Navigation Database) 99
Loading CMax Chart Data 101
Broadcast Datalink Service Purchase and Activation 103
Setting Up a Broadcast Datalink Account 103
Setting up a WSI Broadcast Datalink Account 103
Activating WSI WX Satellite Weather 104
Setting up a Sirius Audio Account 105
Activating Sirius Audio 105
Creating Your XM WX Account 105
Activating Your Account 106
Cleaning the EX5000 Screen 107

Sensor Status Block Symbols 108
Map Symbols 110
Line Styles 112
Data Blocks 114
TAWS Messages 116
Nav Messages 118
Traffic Messages 120
Lightning Messages 122
PFD Messages 125
Narrowcast Datalink Messages 126
Broadcast Datalink Messages 128
Avionics Abbreviations 132
10 Using the EX5000 Outside the US 135
Features Available in the US Only 135
Features Specific to International Flight 136

List of Figures

Figure 1.1 Envision EX5000 MFD 2
Figure 1.2 Envision EX5000 Initialization Page....4
Figure 2.1 Map Page Controls....8
Figure 2.2 Map Page Symbols–Terrain and Position 12
Figure 2.3 Severe Weather Map Symbols....15
Figure 2.4 Map Page Symbols—Runways and Flight Plan....17
Figure 3.1 Map Page—Traffic Mode 22
Figure 4.1 CMax Chart Page (Airport)....29
Figure 4.2 CMax Chart Page (Procedure)....31
Figure 4.3 Procedure Chart views 34
Figure 4.4 Airport Chart Views 35
Figure 4.5 Airport Departure Chart (Night View) 36
Figure 4.6 CMax Selection Page....37
Figure 4.7 Airport Selection Page....39
Figure 4.8 Chart NOTAMs Page 41
Figure 5.1 Trip Page Information....43
Figure 6.1 Nearest Page 51
Figure 6.2 Airport Information Page 53
Figure 7.1 Aux Main Page 55
Figure 7.2 Airport Filter Setup Page 57
Figure 7.3 Declutter Setup Page 59
Figure 7.4 Data Block Edit Page 61
Figure 7.5 System Time Page....63
Figure 7.6 Datalink Configuration Page....65
Figure 8.1 Broadcast Datalink Weather Boundaries 76
Figure 8.2 Datalink Weather—Map Page....78
Figure 8.3 Broadcast Datalink Weather....80
Figure 8.4 Datalink Weather without Traffic Sensors 82
Figure 8.5 Trip Page with Datalink Weather....83
Figure 8.6 Nearest Page with Broadcast Datalink....84
Figure 8.7 Broadcast Datalink NEXRAD Coverage....87
Figure 8.8 Narrowcast and Broadcast Datalink NEXRAD Coverage 87
Figure 8.9 Broadcast Datalink, without Canadian METARs 88
Figure 8.10 Multilink Datalink with Canadian METAR flags 88
Figure 8.11 Example of NEXRAD Coverage Area 89
Figure 8.12 Datalink Messaging Knobs and Buttons....92
Figure 8.13 Receiving a Datalink Message 95

List of Tables

Table 2.1 Track Indicator Graphics 12
Table 2.2 Obstacle 13
Table 3.1 Traffic Symbols 23
Table 4.1 Airport Procedure Views 32
Table 4.2 Airport Chart Views 33
Table 8.1 Message Status Indicators 87
Table 8.2 NOC Message Text Colors 88
Table 9.1 Sensor Status Block Symbols 102
Table 9.2 Broadcast Datalink Sensor Status Block (Optional) 103
Table 9.3 Map Symbols – Airports 104
Table 9.4 Map Symbols – Navigational Fixes 105
Table 9.5 Map Symbols – Traffic Symbols 105
Table 9.6 Map Symbols – Other 105
Table 9.7 Airspace and Airways Lines 106
Table 9.8 SUA and TFR Status Lines 106
Table 9.9 AIRMET and SIGMET Boundary Lines 107
Table 9.10 Data Block Information 108
Table 9.11 TAWS Messages 110
Table 9.12 Nav Messages 112
Table 9.13 Traffic Messages 114
Table 9.14 Lightning Messages 116
Table 9.15 PFD Messages 119
Table 9.16 Narrowcast Datalink Messages 120
Table 9.17 Broadcast Datalink Messages 122
Table 9.18 Avionics Abbreviations 126

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1 Introduction

The Envision EX5000 Multi-Function Display (MFD) provides a moving map view of your flight plan, a broadcast datalink weather, lightning, traffic, navigation data, obstacles, terrain, and CMax™ approach plates with an intuitive user interface. The EX5000 offers the following standard and optional features:

- Lightning information display from a WX-500 or an Avidyne TWX-670 lightning sensor, if installed.
- Full ARINC-429 databus capability, allowing the EX5000 to display curved flight paths, procedure turns, and holding patterns from a compatible GPS navigator.
- Traffic information display from Avidyne TAS600 Series, L-3 Skywatch, or Garmin TIS traffic systems.
- Terminal procedure chart display using the CMax™ function.
- Display of weather and flight restriction information when interfaced with an external Broadcast Datalink receiver or internal Narrowcast Datalink receiver.
- Display of TAWS terrain information when interfaced with an installed EGPWS system.

Note: Consult the Flight Manual Supplement (FMS) provided with the aircraft and/or sensors prior to operation. The FMS contains information specific to your installation and may contain operating limitations applicable to your aircraft configuration.

1.1 Using the Envision EX5000 MFD

Figure 1.1 Envision EX5000 MFD

The controls on the bezel of the Envision EX5000 are placed to allow you quick and intuitive access to the information you need, when you need it.

1) **PhotoCell Light Sensor**—Automatically compensates display brightness for varying lighting conditions.

2) **Brightness Control**—Allows you to override the default display brightness and adjust the brightness level. Press the top button to brighten the display; press the bottom button to dim it.

3) **Data Port**—Provides a front panel access point for loading database updates.

Note: When removing the rubber cap from the data port, pull the cap gently **from the top** until it pops out. Make sure the cap is out of the way (but not removed) before plugging anything into the USB port.

Do not tug on the tab at the bottom of the cap; this can cause the loss of the protective cap.

4) **Buttons**—Used to select modes or change the display as indicated. Buttons are active when a label appears on the screen adjacent to the key.

5) **Page Control Knob**—The left knob provides quick access to the main EX5000 pages, including the Map Page, Trip Page, and Aux Page, as well as the main pages for any optional features. The current page is highlighted in the Page Bar on the lower left corner of screen.

6) **Selection & Range Control Knob**—Depending on the page you are viewing, the right knob controls functions such as selecting items on the page or changing the view range. The label on right knob changes as appropriate.

7) **Message Bar**—The message bar keeps you informed about critical as well as routine information from the EX5000. When information needs to be conveyed the message bar appears next to the bottom right button.

Note: The message bar displays one message at a time. If more than one message is available, the message bar will display the highest priority message first. Press the ACK button to clear the current message and view those underneath.

1.2 Power Up

On power up, the system performs a brief hardware self-test, then initializes its functions systematically. After initialization (about a minute after power-on), the title page, with database currency information, is displayed. Check to ensure that you do not have any expired databases before continuing.

When the EX5000 is ready the, “Press any bezel key to continue,” message is displayed.

AVIDYNE
Entegra EX5000 R6.0
NOTICE
Refer to the applicable Terrain, Traffic, and Lightning sensor
Approved Flight Manual Supplements for system operating limitations.
Press any bezel key to continue...
Charts © Jeppesen Sanderson, Inc:
NavData: Americas Valid Feb 17, 2005 Thru March 17, 2005
Obstacles: NOAA NorthAmerica Valid Jan 19, 2005 Thru March 16, 2005
530-00180-002 Rev 00

Figure 1.2 Envision EX5000 Initialization Page

The EX5000 Startup Page reports the valid dates for the currently loaded CMax™ chart data and NavData. Check to ensure that you do not have any expired databases before continuing.

For CMax data:

- If the issue date for the next update has passed, the Startup Page displays, “Update Available,” in white.
- If the current date is more than a week past the issue of the next update, the message, “Update Required,” is displayed in yellow cautionary text.

- If CMax is more than 10 weeks out of date, access to the charts is revoked until new CMax data is loaded.

For NavData, the date range is displayed if the data is valid; if it is not valid, the word, “EXPIRED,” and the expiration data are displayed in yellow.

For more information about updating CMax and NavData, see Section 9.1, "Updating Your Databases" on page 98.

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2 Map Page

The Map Page displays your current flight plan overlaying a map of the area over which you are flying. The EX5000 allows you to select the data you want to display on the Map Page.

Turn the *Select* knob on the Page Bar to Map to display the Map Page.

This section discusses the following topics:

- *Map Page—Controls*, page 8
- *Map Page Symbols—Terrain and Position*, page 12
- *Map Page Symbols – Weather*, page 15
- *Map Page Symbols—Runways and Flight Plan*, page 17
- *Map Orientation Control*, page 18
- *Errors Displayed on the Map Page*, page 19

2.1 Map Page—Controls

Buttons on the left side of the bezel provide access to sensor modes and pages. Buttons on the right side of the bezel access the mapping functions, and control how the Map is viewed.

Figure 2.1 Map Page Controls

Note: For information about the Map Symbols, see Section 9.5, "Map Symbols" on page 110.

1) **Sensor Functions**—Control overlay and modes of available sensors. Buttons are only displayed for the sensors installed in your aircraft:

   - **Traffic—**Cycles through traffic sensor modes.See Chapter 3 "Traffic Mode and the Traffic Page ," for more information on traffic modes.
   - **Lightning**—Depending on your broadcast service level, when both Broadcast Datalink and a onboard lightning sensor are installed, cycles through lightning sensor modes and overlays in the following order; Strike, Cell (WX-500

only), Datalink, Display Off. When only one source of lightning data is installed, only the appropriate modes are available. See your lightning sensor User's Manual for further details.

Note: The TWX670 can accurately display lightning strikes in all selectable ranges, including within 25 NM.

Note: **(WX-500 only**) The lightning sensor maps thunderstorm activity by monitoring electrical discharge activity within a 200-mile radius of the aircraft. The WX500 does not accurately display lightning in ranges less than 25 NM. It can show lightning less than 25 NM, but the accuracy is not suitable to zoom in on. Display ranges greater than 25NM accurately display lightning strikes outside the 25 NM radius.

- **Clear Strikes**—Removes current lightning symbols to allow for the refresh of lightning data when using a onboard lightning sensor. Does not remove Datalink lightning.
- **WX Rpts**—Controls the type of Datalink weather information displayed on the map, as follows:
  - **All**—Displays graphical METARs, AIRMETs, and SIGMETs.
  - **METARS**—Displays graphical METARs only.
  - **AIRMET**—Displays graphical AIRMETs only.
  - **SIGMET**—Displays graphical SIGMETs only.
  - **DSPLY OFF**—Turns off display of all weather information.

  For more information about Datalink functions, see Section 8.5, "Map Page with Datalink Weather" on page 78.

2) **Map Functions**—Controls basic look of the map in terms of orientation, number of elements, and base map.

- **View**—Orients the map for either Track/Heading Up or North Up. FORWARD and CENTER views are oriented with Track/Heading Up. North Up orients the map to true North, with the ownship symbol rotated to show track/heading.

- **Declutter**—Controls the four levels of navigation database detail on the Map from most to least:

- **Base Map**—Controls the base map layers:
  - **TERRAIN**—Color-contoured terrain, bodies of water, and political boundaries.
  - **BASE**—Bodies of water and Political boundaries
  - **NONE**—No base map
- **WX Ovly**—Controls the type of weather information displayed on the map. Pressing this button toggles the display between:

> **Note**: (**For WSI weather**) If you have an Avidyne MLB700 Sirius receiver installed, you have a WSI weather subscription. WSI's premium radar product is called NOWRAD, which is data derived from the NEXRAD doppler radar system and processed by WSI. The EX5000 and this document use the generic term NEXRAD throughout to refer to datalink radar imagery (NEXRAD or NOWRAD).

  - NEXRAD — If Narrowcast Datalink is installed, displays Narrowcast NEXRAD information on the map. Narrowcast uses two-way messaging to send your flight plan to the Avidyne Network Operations Center (NOC), which then sends you only the data pertinent to your flight.
  - NEXRAD — Displays Broadcast NEXRAD information on the map. Storm cell icons are not displayed.

    For most operations, the EX5000 displays weather data the same way regardless of which Datalink system is in use. Both systems provide NEXRAD data; a composite image depicting precipitation as seen by multiple ground-based weather radar sites. The image is color-coded to show both intensity levels and precipitation types. For more information about Datalink, see Section 8.1, "About Datalink Services" on page 69.

- NEXRAD+ — The (+) plus option shows the broadcast NEXRAD overlay with storm cell icons. This option may not be available depending on your broadcast subscription level.
- **NONE** — Removes all NEXRAD data from the map display.

3) **Range Control Knob—**The right knob controls the map's range and allows you to set the scale from 1NM out to 1500NM. The selectable ranges are, in nautical miles, 1, 2, 5, 10, 15, 20, 30, 40, 50, 75, 100, 150, 200, 300, 400, 500, 750, 1000, and 1500.

Note: The terrain base map is automatically removed and Nav database information is fully decluttered at 750NM and higher ranges.

Note: The Map Page monitors the "health" of the sensors (traffic and lightning) by means of a signal pulse. Map looks for a signal every three seconds from each sensor. If it doesn't see this signal it assumes the sensor has failed in some way. When this happens, the following occurs on the display:

- Sensor data is removed from the overlay display.
- The word "FAIL" displays in the sensor's status line in yellow.
- The sensor symbol changes from cyan to yellow (if the sensor was on).

What to do:

Select the Setup Page and perform Self-Test for the applicable sensor.

2.2 Map Page Symbols—Terrain and Position

The EX5000 Map Page depicts your aircraft's position in relation to your flight plan, nearby airports, terrain, traffic, lightning, special use airspace and other navaids.

Note: For information about the Map Symbols, see Section 9.5, "Map Symbols" on page 110.

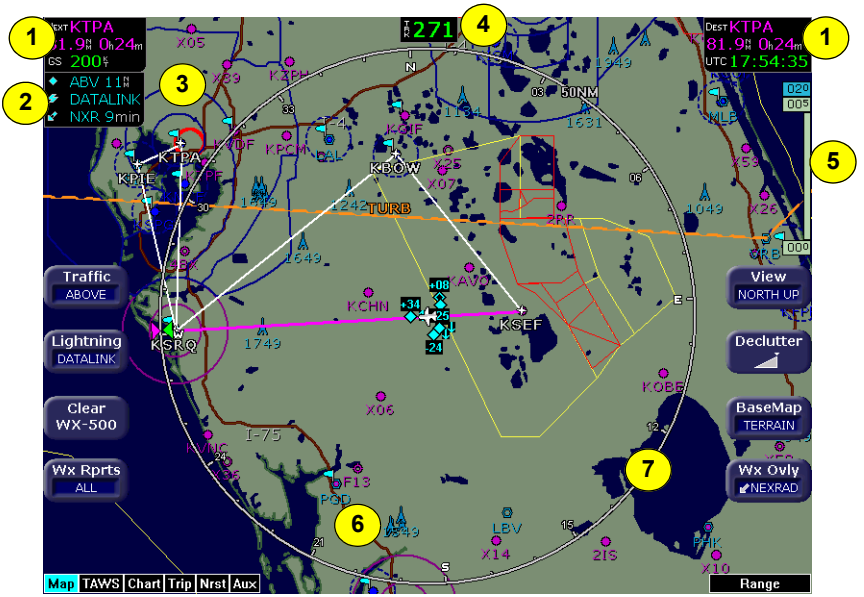


Figure 2.2 Map Page Symbols–Terrain and Position

1) **Data Blocks (Left & Right)**—View navigation data in data blocks in the upper corners of the display. For more information, see Section 7.4, "Data Block Edit Page" on page 61.

2) **Sensor Status Box—**Displays the status of the available sensors including radar, traffic, lightning and both 2-Way Datalink and Broadcast Datalink. The NEXRAD (NXR) display includes the NEXRAD data age, which is the elapsed time since the product was created by the weather provider. See Table

9.1 Sensor Status Block Symbols on page 108 for more information on status box symbols.

NEXRAD is the only Broadcast Datalink product on the EX5000 that displays the time since the product was created by the weather provider. Refer to the Trip page for information on all other weather products. When using Datalink weather, monitor the data age so you are aware of the time elapsed since the last weather update.

3) **Special Use Airspace**—The EX5000 uses several different line styles to convey special use and class airspaces. Class B is solid blue line, Class C is solid magenta line. Class D is dashed blue line, MOA, Warning, and Alert areas are solid yellow lines, and restricted and prohibited areas are solid red lines. See Table 9.7 Airspace and Airways Lines on page 112.

4) **Heading/Track Indicator**—Three triangles around the compass rose provide actual track, desired track, and heading indications. The H/T Block provides digital readout of the current heading, or actual track. Map orientation is indicated in the triangle to the right of the H/T Block.

Table 2.1 Track Indicator Graphics

Heading		Track		Map Orientation	
	Heading		Desired Track		North Up
	Track		Heading		Heading Up
			Actual Track		Track Up

5) **Terrain Scale**—Shows highest and lowest limits of terrain in displayed area. Legend colors in between these numerics represent terrain elevations. Blue obstacle clearance number shows the top of the highest obstacle, when greater than the

highest displayed terrain. Terrain data is not displayed when your aircraft's latitude is greater than 75 degrees (north or south).

The displayed terrain and obstacle indicators are only advisory. It is dangerous to rely on the EX5000 as the sole source of obstacle and terrain avoidance information. Always refer to current aeronautical charts for appropriate terrain and obstacle information.

6) **Obstacles**—The EX5000's database contains towers and other obstacles greater than 200 feet AGL. Obstacles can be displayed with MSL altitude label.

Note: For example, a 2000 foot tall TV tower located in Denver (elevation 5300 feet MSL) will be depicted as being at 7300 feet MSL.

Table 2.2 Obstacle

Graphic	Meaning	Height (AGL)
	Single Obstacle	200' AGL to < 1000' AGL
	Obstacles within 1NM of each other	200' AGL to < 1000' AGL
	Single Obstacle	1000' AGL or higher
	Obstacles within 1NM of each other	1000' AGL or higher

7) **Compass Rose/Range Ring**—Displays a 360-degree or 120-degree compass circle or arc and also indicates current range setting. The range number is the distance from the airplane symbol to the compass arc.

2.3 Map Page Symbols – Weather

Depending on your aircraft options, you can monitor weather patterns from the Map Page including storm cells, lightning, and METARs.

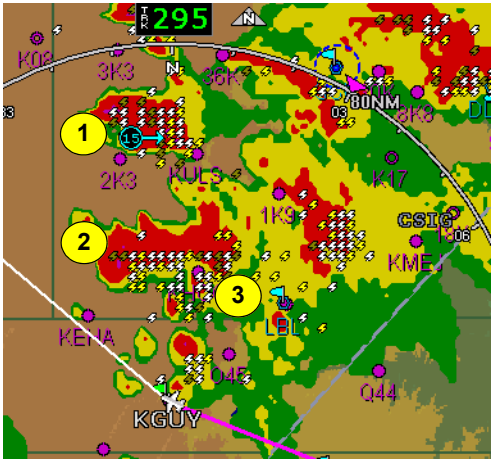


Figure 2.3 Severe Weather Map Symbols

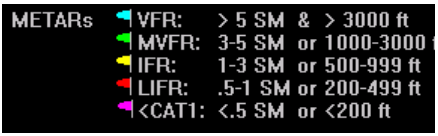
1) **Lightning Indications**—If configured with WX-500 sensor or TWX-670, shows geographically referenced lightning strikes. Lightning strikes from onboard sensors display for three minutes. The Lightning display depends on the selected mode, as follows:

   - **Datalink Mode**—If Broadcast Datalink is installed and you have an appropriate broadcast datalink service level, shows as color-coded lightning symbols. Datalink strikes darken in color until they are removed after 15 minutes.

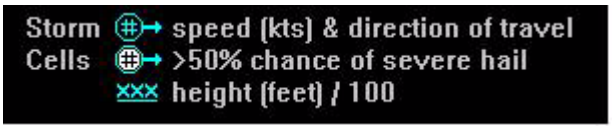
     Datalink strikes within 5 minutes
     Datalink strikes between 5 to 10 minutes
     Datalink strikes between 10 to 15 minutes

   - **WX-500 or TWX-670 Strike Mode—** ×
   - **WX-500 Cell Mode—** +

2) METAR Flags—For each reporting airport, when Datalink is installed and active, a METAR flag provides a quick overview of the weather for that station. The METAR flags are color-coded as follows:



3) Storm Cells—If storm cells are present, the EX5000 displays the cells along with the cell's groundspeed in knots and direction of travel, as well as the cell echo tops with a labe. If there is a greater than 50% chance of hail, the cell displays a white background.



2.4 Map Page Symbols—Runways and Flight Plan

When looking at the Map Page in short range, you can see details, such as runway diagrams, that are not available at longer ranges. Note that your flight plan is always shown.

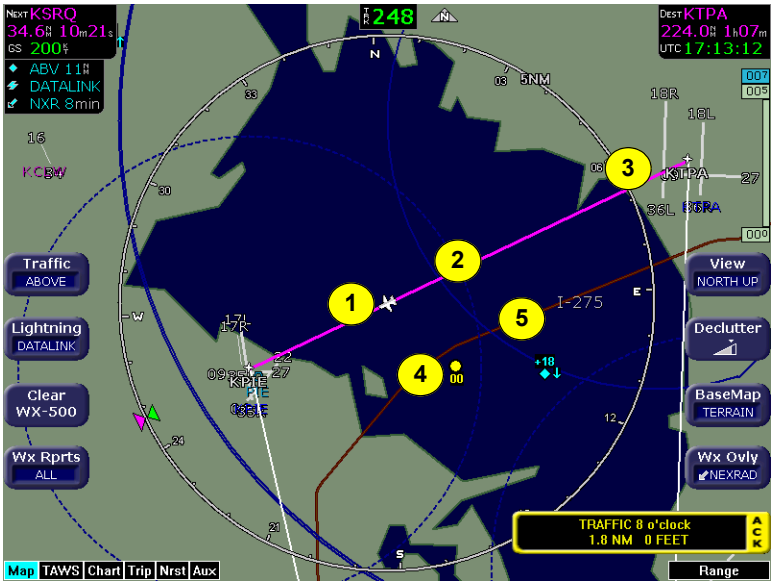


Figure 2.4 Map Page Symbols—Runways and Flight Plan

1) **Ownship Symbol**—Shows the position of your aircraft in relation to the moving map and the selected view.

2) **Flight Plan**—Displays the active flight plan from the GPS. The current leg displays in magenta and all remaining legs are shown in white. When you select an approach procedure on the Garmin 430, all approach segments including holds, DME arcs, procedure turns, etc., are shown (when connected via the ARINC 429 bus).

> **Note**: For most GPS units, the EX5000 does not display the active course leg when you are adjusting the desired track in OBS mode. The desired track leg will be displayed after you finish selecting the course and exit the OBS mode of the GPS.

Note: The Garmin GNS 430/GNC 420 does not differentiate curved flight path segments from straight segments when interfaced with the EX5000 via an RS232 interface. Therefore, the EX5000 will connect the beginning and end waypoints of a curved segment, such as a DME arc, with a straight line. Under these circumstances, the straight line must be ignored. Approach procedures should be flown using the GNS 430/GNC 420 navigator's CDI as the primary reference. Consult your avionics installation facility to determine if your EX5000 is interfaced to the GNS 430/GNC420 via ARINC 429 or RS232.

Note: The Garmin 400W/500W can use the parallel track. For Garmin 400W/500W software at Release 2 or earlier, if a parallel track is active, the current non-offset leg will be displayed in white. For Garmin 400W/500W software at Release 3 or later, if a parallel track is active, the parallel track leg will be displayed in white.

3) **Airport Runway Diagrams**—Displays runway layouts of nearby airports when looking at the map at a less than 5NM range. As you range in, the scaled runway diagram with heading labels shows your exact location in proximity to the field.
4) **Traffic Indications**—Shows traffic symbol relative to current position and includes relative altitude (when available) with respect to airplane symbol. See your traffic sensor User's Manual for further details. When available, TIS installations will show a ground track "stinger" for each intruder, indicating the intruder's track as measured by ground radar. Traffic Symbols are shown in Table 3.1 Traffic Symbols on page 24.
5) **Interstate Highways**—Depicted as brown lines when terrain is selected to be shown. Interstates are labeled in white. (e.g. I-95). Highways are removed from the terrain map when the range is greater than 300NM.

2.5 Map Orientation Control

The Map View button allows you to control the orientation of the map and sensor data displayed on the EX5000. EX5000 traffic and lightning sensor symbols are positioned relative to the aircraft nose. When the Map View is North-Up you need to pay more attention to locate traffic outside the aircraft. Set Map View to Center or Forward to display this data consistent with typical dedicated traffic and lightning sensor displays.

2.6 Errors Displayed on the Map Page

In general, the following errors are generated externally to the MFD, but you may notice them on the Map or other pages within FlightMax.

2.6.1 Loss of GPS Input

Loss of primary GPS is annunciated in a number of ways on your EX5000.

- The “Nav Source not communicating” message displays.
- The aircraft symbol is removed.
- There is no heading information displayed (if GPS is lost, no heading is displayed regardless of heading source).
- The desired track icon is removed from the compass rose.
- There is no groundspeed information displayed.

The EX5000 continues to provide Datalink weather for your flight at its last known position. If the primary GPS fails during flight and you have a second GPS connected to the EX5000, you may switch your GPS input to the backup source by pressing the Nav Src button on the Aux Page.

2.6.2 Loss of Heading Input

The source for heading data on your aircraft is dependent upon the particular complement of equipment you have installed in your aircraft. Loss of heading is typically associated with the failure of one of the following:

- The WX-500 Stormscope system (if installed and a heading source is connected to the WX-500).
- The Skywatch system (if installed and a heading source is connected to the TAS).
- A problem with heading from a Primary Flight Display (PFD).
- The GPS (This would be a pass through of the heading from another source, such as an Avidyne PFD. The GPS does not determine heading).

If an installed heading source becomes unavailable or invalid, the EX5000 will automatically switch to using GPS track for map alignment.

If the track source also becomes unavailable or invalid, the following conditions will occur:

- All traffic and lightning data is removed from the display.
- The aircraft symbol is replaced by a direction-less symbol (a white + symbol).
- The compass labels (N,S, E, and W) are removed from the display.
- The map and flight plan data will continue to be displayed.
- The map orientation annunciation is removed from the display.
- The heading/track indicator will display a series of dashes (“---”)
- The map is oriented True North Up.

What to do:

- Have the avionics wiring inspected.

When heading/track is restored, Map will resume normal operations.

3 Traffic Mode and the Traffic Page

When a Traffic Advisory (TA) is reported from the traffic sensor, the EX5000 displays a traffic alert message in the Message Bar. Pressing the ACK button next to the message acknowledges the traffic alert and displays the dedicated traffic page that provides you maximum traffic situational awareness.

It is dangerous to rely on the EX5000 as your sole source of data for collision avoidance. Traffic information is provided as an aid to visually acquiring traffic. Maneuver your aircraft based only on ATC guidance or positive acquisition of conflicting traffic. It is your duty as pilot in command to see and avoid.

Notes: The intruder track information provided by TIS traffic systems is only accurate to within 45° of true intruder track. Take this into account when visually acquiring the reported traffic.

Keep in mind that intruder traffic can maneuver at any time, and the current intruder track direction does not guarantee the intruder will continue along that track.

For traffic sensors without track information (e.g. TAS), traffic symbols are shown without the “stinger”.

3.1 The Dedicated Traffic Page

The dedicated Traffic Page is a specially configured Map page with the following settings:

- **View**—Center, with heading (or track) up
- **Range**—5 NM
- **Base Map**—No terrain or political boundaries
- **Declutter**—No symbol or airspace depictions
- **Lightning**—Not displayed
- **Flight Plan**—Displayed
- **Datalink Weather**—Not displayed.

Up to 5 non-bearing intruders (traffic threats reported by the traffic sensor without valid bearing) are listed below the airplane symbol.

Acknowledging the TA message from the Traffic mode removes it from the message bar, allowing other messages to be displayed. The TA message is automatically removed when the threat is reduced or the intruder is no longer present.

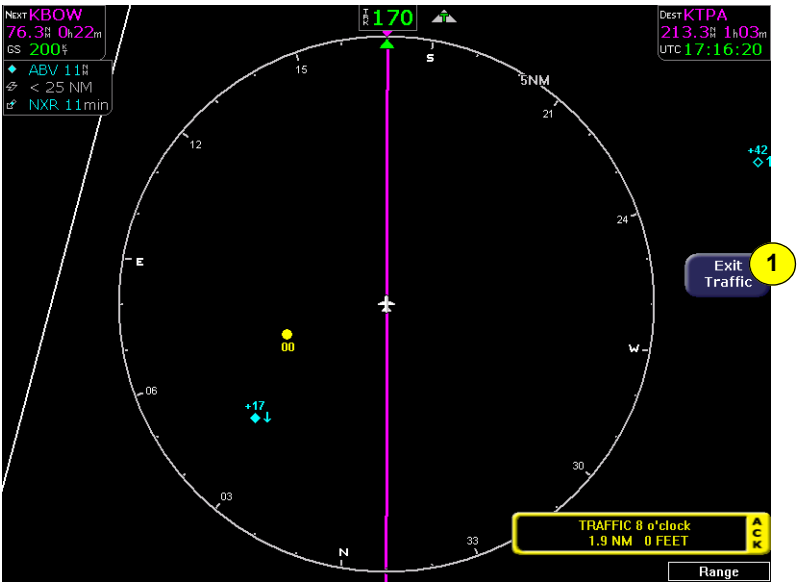


Figure 3.1 Map Page—Traffic Mode

1) **Exit Traffic**—Restores the Map Page to the previous settings. If the Map Page is restored prior to acknowledging a TA, the message will remain displayed and acknowledging it will once again bring up the dedicated Traffic Page.

Note: Traffic limitations and operational ranges depend on the installed traffic sensor. For TAS or TCAD sensors, see the corresponding sensor Pilot Guide. For TIS sensors, see Section 1-3-5 of the Aeronautical Information Manual.

The available Traffic button modes are listed below. For more information on specific traffic sensor modes, consult the user documentation for your traffic sensor.

- **Avidyne TAS600 series (including 9900BX) and Skywatch**—Traffic modes are ABOVE, NORMAL, UNLIMTD, BELOW, and DSPLY OFF.
- **TIS**—Traffic modes are DSPLY ON and DSPLY OFF.
- **TCAD 9900B**—Traffic modes are GROUND, TERMINAL, STANDARD, ENROUTE, UNLIMITED, APPROACH, and DSPLY OFF. Note that some TCAD installations will support automatic mode switching by the TCAD unit. The current mode is always reported on the EX5000 screen.

3.2 Traffic Symbols

On the EX5000, aircraft traffic detected by a Traffic Sensor (referred to as intruders) are displayed as one of three symbols. If a compatible TIS system is installed and intruder track information is available, the appropriate symbol will be shown with a “stinger” which depicts the current ground track of the intruder, as detected by ATC radar systems. Traffic symbols are:

Table 3.1 Traffic Symbols

Non-TIS Symbol	TIS Symbol	Type	Meaning
		Traffic Alert (TA)	Traffic within the alert zone defined by the traffic sensor.
		Proximate Traffic	Traffic close to your position but not within an alert zone.
		Other Traffic	Traffic detected by the traffic sensor, but determined not to be a current threat.

Traffic sensors do not provide any traffic awareness data for aircraft without operating transponders. Therefore, these aircraft will not display on the EX5000. It is your responsibility to see and avoid all other traffic and to maintain appropriate separation.

Traffic alert information is displayed in the message bar as shown in the example above.

1) Relative bearing of target.

2) Range in nautical miles.

3) Relative altitude, for example, -200 would be 200 feet below. For example, -200 would be 200 feet below your aircraft, as reported by the traffic sensor.

Intruders are displayed as they are received from and identified by the sensor. The threat level assigned to an intruder is specified by the sensor when it transmits the intruder data. Threat data, range, bearing, altitude, ID and closing direction are defined by the sensor and the type of sensor used in your system.

If the intruder altitude and vertical speed are known, they are displayed alongside the intruder symbol. The number immediately above or below the traffic symbol indicates the relative altitude of the intruder to your position, in hundreds of feet. An arrow next to an intruder symbol shows the direction of any vertical movement of the intruder that is in excess of 400 feet per minute.

For example, in the Traffic Alert example shown in Table 3.1, the intruder is 500 feet below and is climbing. In addition, this example with an intruder track shows the intruder is moving along a track approximately 45 degrees to the right of our current map alignment. (i.e. if the EX5000 map is set for North Up, the intruder is flying a track somewhere between 023 and 067. This is the accuracy limit of the intruder track data.)

3.3 TIS Sensor Status

For TIS installations, the following may be reported in the Traffic status block on the EX5000 Map Page:

- **OPER**—The TIS sensor is operating normally.
- **CST 00:00**—The TIS sensor has temporarily lost the information feed from ground-based radar and is in “coast” mode. The EX5000 will continue to display the traffic last received, while the CST timer will count the seconds since the last valid data.
- **RMV 00:00**—After 12 seconds of coasting, the TIS sensor will remove the traffic display and display RMV, and continue to count the time since the last valid data.
- **UNAVAIL**—More than 60 seconds have passed since valid data was received, or TIS data is not available at the current aircraft location.
- **SBY**—The TIS sensor is in standby mode.
- **DATA FAIL**—The TIS sensor has reported an internal fault. Traffic information will be removed from display.

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4 CMax Chart Pages (Optional)

CMax™ is an optional Avidyne feature that allows you to view Jeppesen Terminal Procedure charts on your EX5000. If CMax is installed on your aircraft, you can select Charts from the Page Bar to view the CMax charts. This section discusses the following topics:

- *About CMax*, page 27
- *About Geo-Referenced Charts*, page 28
- *CMax Chart Page*, page 28
- *CMax Views*, page 33
- *CMax Selection Page*, page 37

As pilot in command, it is your duty to have alternate sources of approach data available to you. Do not rely upon CMAX charts as your sole source of navigation information.

It is critical that you update the Jeppesen database regularly and prior to conducting flight operations to insure accurate data. **Use of an outdated database is entirely at your own risk.**

4.1 About CMax

CMax charts include instrument approach procedures, arrivals, departures, airport diagrams, and various taxiway and airspace diagrams typical of Jeppesen printed charts. CMax requires that you have a valid chart data subscription from Jeppesen Sanderson, Inc. For information on obtaining a CMax subscription, see the *Avidyne Data Update Guide* or the Jeppesen website at www.jeppesen.com.

The *Data Update Guide* also contains instructions for loading the chart data to your Zip Drive or USB Flash Memory Drive. See Section 9.1, "Updating Your Databases" on page 98 for information about loading CMax Data onto your EX5000.

Note: You can load new CMax Chart data into the MFD as soon as you receive each data cycle. Any charts that have changes that are effective on a certain date are controlled within the data. The MFD will display the proper Chart data based on the current date and the effective date of the changes to the chart.

4.2 About Geo-Referenced Charts

The greatest additions to situational awareness come from charts that are geo-referenced. A chart is geo-referenced when the chart data supports a correlation of chart position to actual latitude and longitude coordinates. This allows an ownship symbol and flight plan legs to be accurately represented on the chart. If a chart is not geo-referenced, the ownship and flight plan legs cannot be drawn on the chart. Most Jeppesen approach charts and airport diagrams are geo-referenced; most arrival, departure, and miscellaneous charts are not.

4.3 CMax Chart Page

The CMax function is found on the EX5000 as the “Chart” Page, listed in the Page Selector bar if CMax is enabled on your EX5000. The Chart Page is capable of having two charts ready for viewing at any one time: an airport diagram, and a procedure chart (or other miscellaneous chart associated with that airport). The airport and associated charts are selected on the Chart Selection Page, described in Section 4.5, "CMax Selection Page" on page 37.

The EX5000 Startup Page reports the valid dates for the currently loaded chart data. If the date for the next update has passed, the Startup Page will report this in yellow cautionary text. If the chart data becomes more than 10 weeks out of date, access to the charts shall be revoked until new chart data is loaded.

On power up, if your EX5000 is receiving a valid position from your GPS unit, the Chart Page will default to display the airport diagram of your current position. An approach procedure chart will not be displayed until one is selected. If no valid GPS position is available at start-up, the Chart Page will default to the Chart Selection Page for manual selection of a chart.

If you select the Chart Page immediately upon power up, CMax may still be initializing and will display the following message: “CMax Initializing/Please Wait.” The Chart Page will begin normal operation when initialization completes.

On landing, if the Chart Page is being displayed, the EX5000 will automatically switch to display the Airport diagram for the current location when the GPS Ground Speed drops below 50 knots.

The Chart Page shows the airport diagram of the current airport, with ownship symbol for current aircraft position, if the airport diagram is geo-referenced.

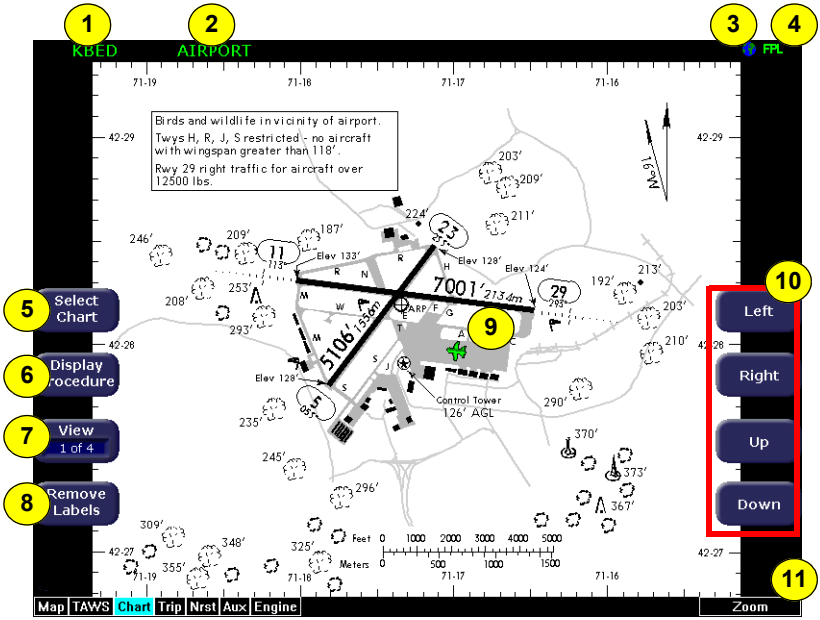


Figure 4.1 CMax Chart Page (Airport)

1) **Airport Identifier**—The airport identifier for the current airport displays in green.

2) **Chart Name**—The name of the current chart being displayed, also in green.

3) **Geo-referenced Symbol**—When the displayed chart is geo-referenced, a small globe displays. If the chart is not geo-referenced, the globe symbol is crossed out.

4) **Flight Plan Symbol**—an FPL symbol indicates the option to display the current flight plan is turned on. If the display of flight plan is turned off, the FPL symbol is crossed out. Note that if a chart is not geo-referenced or no flight plan is received from the GPS, the flight plan cannot be displayed even if the option is selected.

5) **Select Chart**—Displays the Selection Page to allow you to select a new chart for display. For more information, see Section 4.5, "CMax Selection Page" on page 37.

6) **Display**—*Display* allows you to toggle between displaying Airport and Procedure charts.

   - *Display Airport* shows when the current Procedure chart displays. Press *Display Airport* to display the Airport chart.
   - *Display Procedure* shows when the current Airport chart displays. Press *Display Procedure* to display the Procedure chart.

7) **View**—Controls which portion of the chart is being displayed. See details below.

8) **Remove Labels**—Removes the button labels from the page to allow a full view of the current chart. Press any button again to redisplay the labels.

9) **Ownship**—Displays the current position of the aircraft. The chart nominally remains fixed and the ownship symbol moves across the chart with aircraft movement.

10) **Pan Buttons**—The right-hand buttons allow you to manually move the chart on the screen. The pan buttons are only active when the current view can be panned. The Plan view of each chart can generally be panned; many information pages, such as header and departure views, cannot.

    Not shown: Center—When you use *Pan*, the *Center* button is displayed to allow you to re-center the chart. When panning, the aircraft position, and ownship symbol, may move towards or off the edges of the chart area. Press *Center* to re-center the chart on the current position hide the *Center* button.

11) **Zoom Control Knob**—The right knob allows you to zoom the chart for close-up examination of a specific area. The label only appears when the current view can be zoomed. Most information view pages, such as headers, cannot be zoomed. If you have panned the chart, zooming all the way out to the full-screen chart size also re-centers the chart on the screen.

A typical approach procedure chart is shown in Figure 4.2:

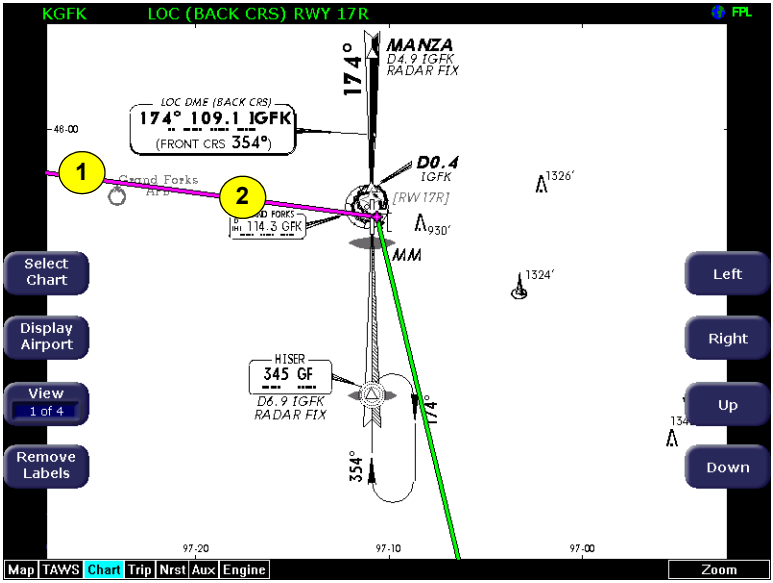


Figure 4.2 CMax Chart Page (Procedure)

1) **Flight Plan**—The flight plan is overlaid on the Plan View when you select the flight plan display option (on Selection Page) and the chart is geo-referenced. If a flight plan does not display, check that you selected the correct airport and approach.

2) **Flight Plan Active Leg**—The active leg of the current flight plan, if displayed, is magenta. Non-active legs are shown in green.

Note: The Garmin 400W/500W can use the parallel track. For Garmin 400W/500W software at Release 2 or earlier, if a parallel track is active, the current non-offset leg will be displayed in white. For Garmin 400W/500W software at Release 3 or later, if a parallel track is active, the parallel track leg will be displayed in white.

Note: The ownship symbol on the Chart page is always oriented according to the current GPS ground track. Therefore, the ownship is always pointed in the direction the aircraft is moving, and does not show any crab angle induced by crosswind components.

Note: For a flight plan to be displayed on a given chart there must be a waypoint on that chart in the flight plan. For example, a direct flight plan from KBED to KLAX passes over KEMT. If you bring up KEMT charts, the KBED-KLAX flight plan will not display. To display the flight plan over KEMT, a waypoint on an approach for KEMT must be included in the flight plan.

4.4 CMax Views

The EX5000 provides two sets of charts, Procedure and Airport. For ease of use and readability, each chart is divided into sections that are shown individually. Use the *Display* button to toggle between Procedure charts and Airport charts. Press *View* to cycle through the available views for that chart.

Note: If CMax detects non-standard data for a particular chart, a full chart view will be the only available view for that chart, and the geo-referenced ownship and flight plan will not be displayed.

4.4.1 Procedure Chart Views

For the Procedure chart, the Header, Profile, and Minimums views also feature a small “preview pane” of the Plan View, which, although too small to read all chart details, gives the user a general overview of the approach for situational awareness. The flight plan and ownship symbol are also displayed on the preview pane.

The available views are:

Table 4.1 Airport Procedure Views

#	View	Description
1 of 4	Plan	Includes a flight plan overlay if available (shown in Figure 4.2).
2 of 4	Header	Contains general chart information and appropriate communication frequencies.
3 of 4	Profile	Includes the profile view of the approach procedure.
4 of 4	Minimums	Shows the descent minimums for the approach.

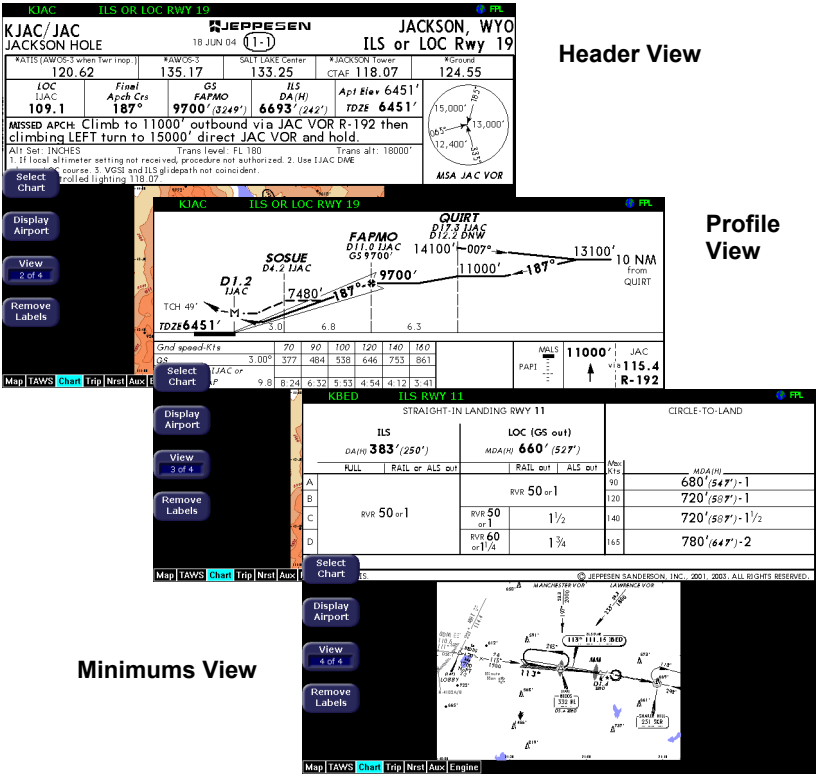


Figure 4.3 Procedure Chart views

4.4.2 Airport Chart Views

For airport charts, the available views are as follows:

Table 4.2 Airport Chart Views

#	Chart	Description
1 of 4	Plan	Includes a flight plan overlay, if available (shown in Figure 4.1).
2 of 4	Header	Includes general chart information and communications frequencies.
3 of 4	Runways	Shows runway information for the airport.
4 of 4	Departure	Displays specific departure procedure information.

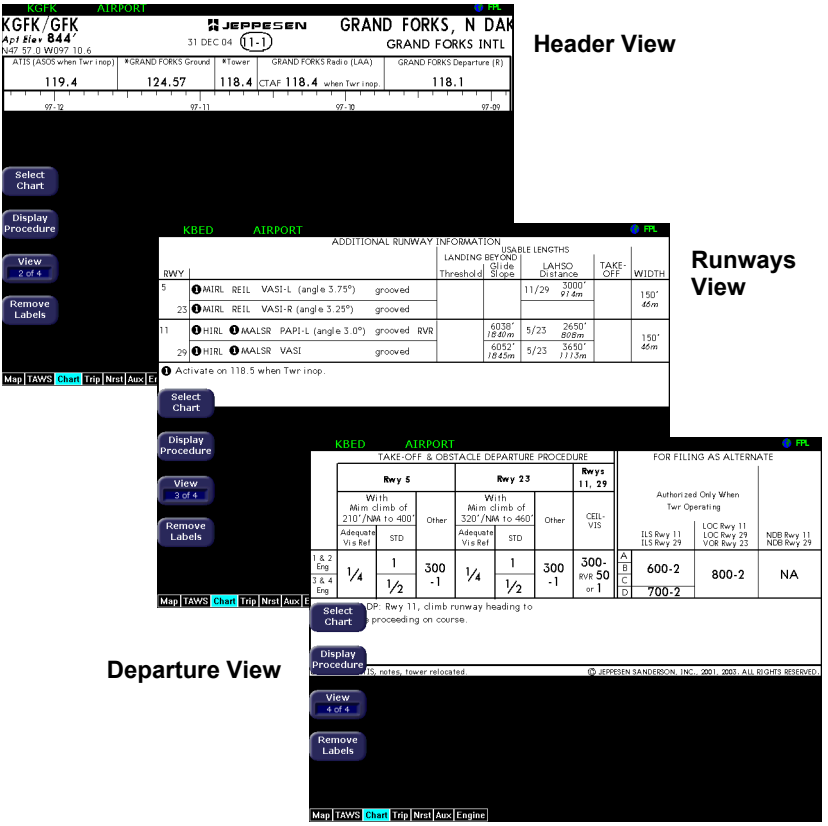


Figure 4.4 Airport Chart Views

Note that not all charts will have all information sections. Airport charts, for example, may or may not have runway or departure information. For larger airports, this information is often large enough to warrant a separate chart, which can be selected from list on the Selection Page.

Charts that cannot be split into smaller sections are shown as a complete chart, with the View button not displayed, since only one View type is available.

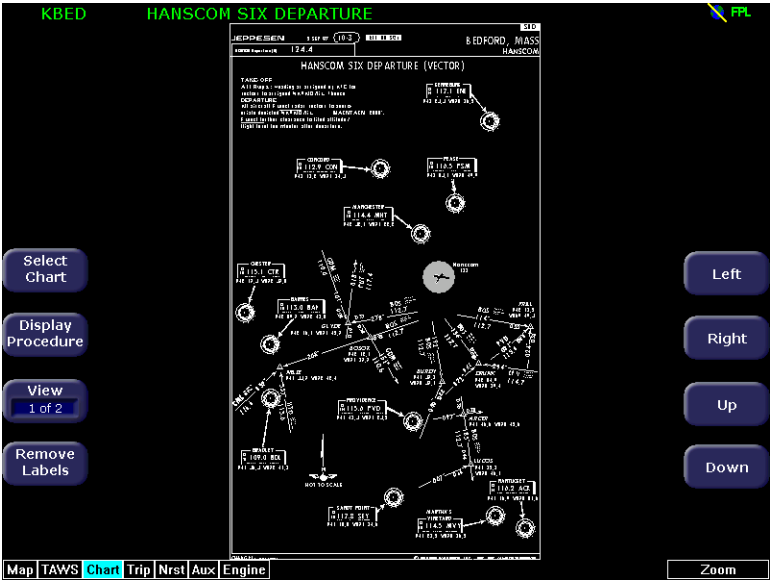


Figure 4.5 Airport Departure Chart (Night View)

4.5 CMax Selection Page

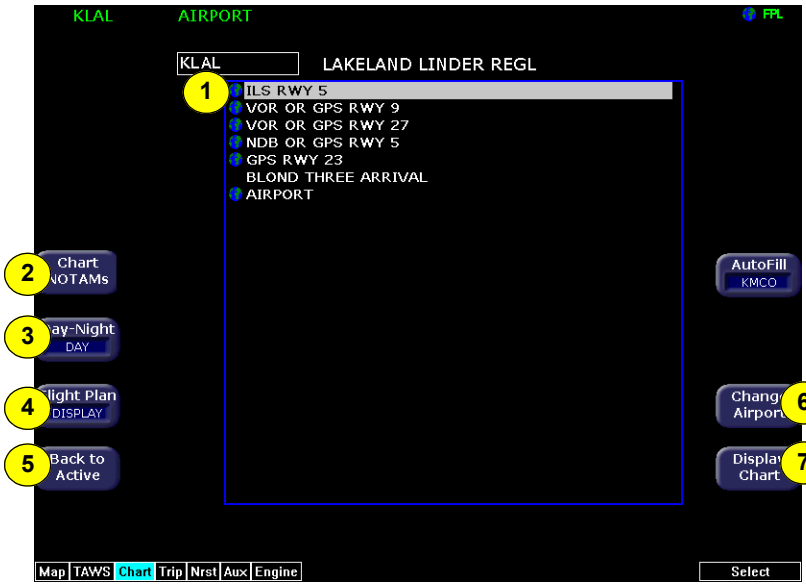


Figure 4.6 CMax Selection Page

1) **Chart Selection list**—A list of all charts available for the identified airport. Although the majority of charts listed are indeed instrument approach procedure charts and are generally referred to in this documentation as procedures, the list also includes other types of charts such as airspace diagrams, taxi diagrams, special instructions, and other miscellaneous charts.

> **Note**: The EX5000 shows only those charts covered by your Chart data subscription. The Charts are listed in the Jeppesen chart index order.

2) **Chart NOTAMs**—The *Chart NOTAMs* button only displays if chart NOTAMs exist for the currently-selected airport. Press *Chart NOTAMS* to bring up a window that lists any associated chart NOTAMs for the airport currently entered in the Airport Entry Field. See Section 4.6.1, "Chart NOTAMs Page" on page 41 for more information.

3) **Day/Night**—Toggles the chart display between *Day* and *Night* modes. Day mode displays black text on a white background; Night mode is white text on a black background. Other colors such as water or shaded terrain are also adjusted for Day or Night mode. The EX5000 starts in Night mode to preserve night vision.

4) **Flight Plan**—Toggles the display of the flight plan overlay on the chart Plan View between DISPLAY and DSPLY OFF. Changes to this selection are effective immediately.

5) **Back to Active**—Returns to the current active chart display screen. Any inputs to the Airport Entry Field or Chart list are abandoned. Changes to flight plan display status, however, are preserved.

6) **Change Airport**—Moves the cursor to the Airport Entry field, described in Section 4.6, "Selecting an Airport" on page 39.

7) **Display Chart**—Loads the selected chart and displays it on the Chart Page. Remember that the associated Airport diagram is also automatically made available on the Chart Page when a procedure chart is loaded by pressing Display Chart.

Note: As a valid chart, the Airport diagram is listed in the Chart Selection list, however, it is not usually necessary to load the Airport chart, since it is always accessible on the Chart Page by pressing the Display Airport button.

4.6 Selecting an Airport

Use the Airport Entry Field to specify the airport you want to view.

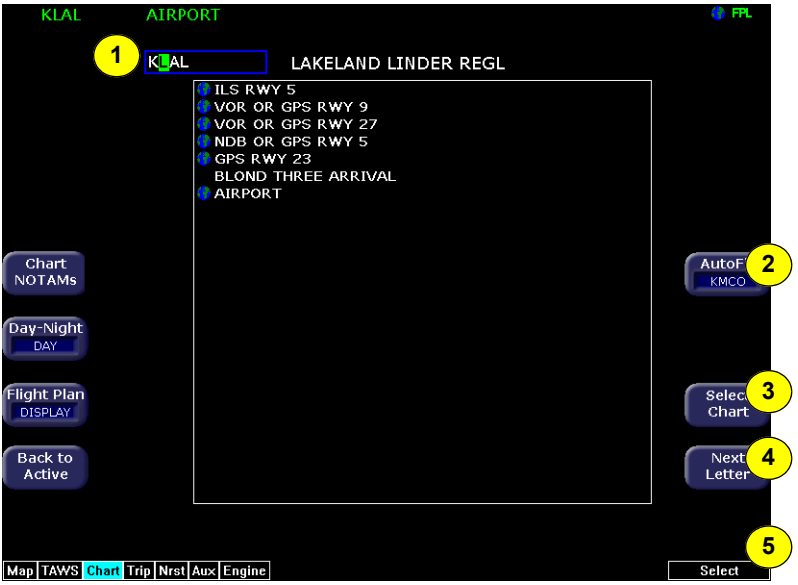


Figure 4.7 Airport Selection Page

1) **Airport Entry Field**—This field accepts airport identification codes (such as KCAD, etc.). The EX5000 will try to auto-complete an airport entry as the first characters are entered. Press the *AutoFill* button to immediately fill this field with the destination airport. Only those airports within the coverage area are auto-completed.

   A list of all charts available for the identified airport appears in the chart list area. The name of the airport in the Airport Entry Field is listed next to the entry field.

2) **AutoFill—**When pressed, moves the detected destination airport listed on the button into the Airport Entry Field.

Note: The AutoFill button automatically detects the destination airport if the final waypoint is an airport or a waypoint that is part of an instrument approach procedure. However, for some approaches, *AutoFill* may detect another nearby airport rather than the intended destination. Make sure the desired airport is displayed before pressing the button. *AutoFill* does not display under the following conditions:

- An Airport cannot be determined due to GPS limitations.
- When the feature is not supported by some GPS models.
- The current airport destination is not available in your chart data coverage area.

3) **Select Chart**—Moves the active selection cursor from the Airport Entry Field to the Chart Selection list.

4) **Next Letter**—Use *Next Letter* to move the cursor within the Airport Entry Field to the next character location.

5) **Select Knob**—Use the right knob to select the character for the current cursor position when entering an airport identifier. The character selection scrolls through A to Z, 0 to 9, and common punctuation marks and symbols before returning to A.

4.6.1 Chart NOTAMs Page

Displays the chart NOTAMs associated with the currently displayed airport.

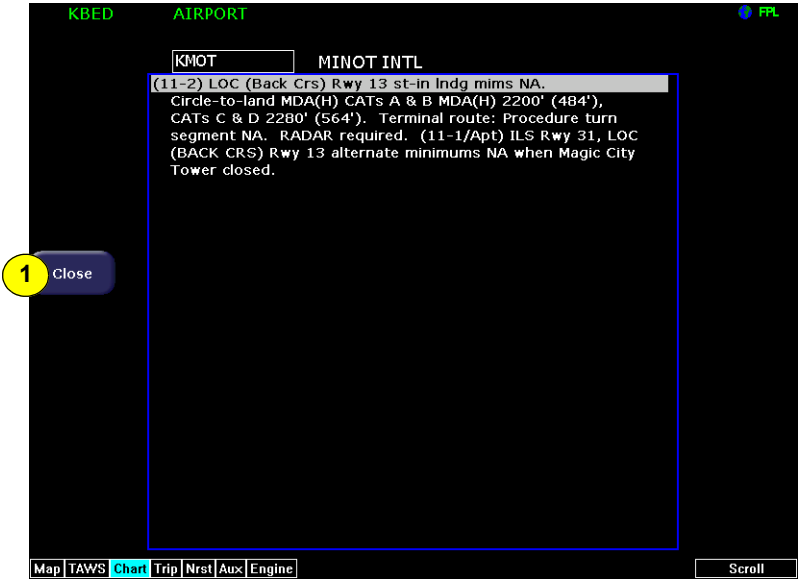


Figure 4.8 Chart NOTAMs Page

1) **Close**—Press *Close* to close the Chart NOTAMs window and return to the Selection Page.

Press the *Chart NOTAMs* button from the Selection Page to display the chart NOTAMs associated with that airport. Chart NOTAMs specific to that airport are listed first, followed by any general chart NOTAMs.

Note: Chart NOTAMs address changes to information contained on the charts, and do not include local or regional operational NOTAMs. Always obtain local and regional NOTAMS before any flight.

In the unlikely event of data corruption during operations, the EX5000 may exhibit one of the following symptoms:

- EX5000 reports that no chart data is available at all.
- Chart page is not accessible.
- Expected airports are not available for chart selection.

If you observe any of these, reload the CMax chart data using the CMax Dataloader, described in the Avidyne *CMax Data Update Guide* or in the Jeppesen JeppView for MFD *Quick Start Guide*. If problems persist, contact your dealer or Avidyne Technical Support.

As pilot in command, it is your duty to have backup sources of data available.

5 Trip Page

The Trip Page is continuously updated during flight. The distance and the time values are updated with each new positive fix from the GPS. The route legs advance with each waypoint message. Turn the Page knob to bring up the Trip Page, which shows the remaining legs in the current flight plan and other data being received by the EX5000 from the GPS.

If the entire flight plan does not fit on the screen, an ellipsis (...) displays in the next to last line. The destination line is always displayed. All flight plans are from the GPS. A “No Flightplan Available” message displays if there is no flight plan entered or if the GPS has failed.

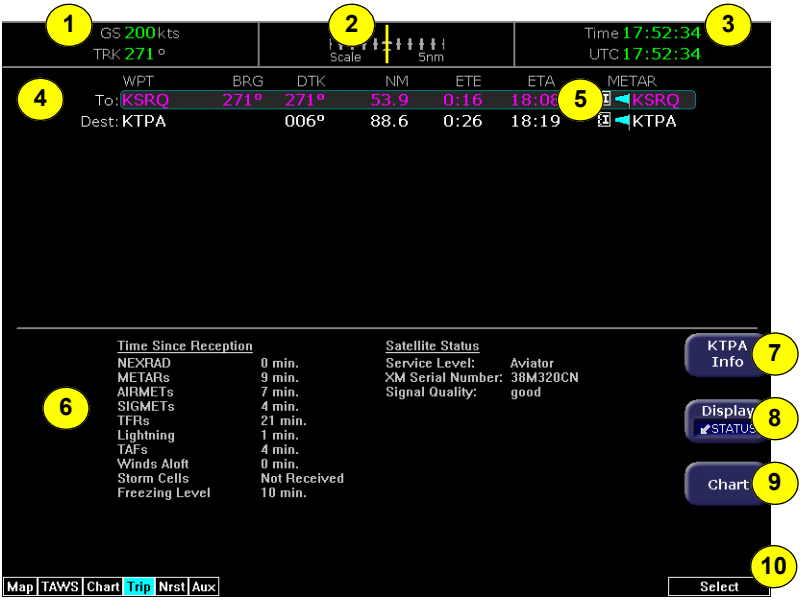


Figure 5.1 Trip Page Information

1) **Current ground speed and track**—As reported by your GPS Navigator.

2) **Course Deviation Indicator (CDI)**—Shows lateral distance (Crosstrack deviation) from desired course, providing continuous navigation reference when viewing the Trip Page.

3) **Time**—Local and UTC time in HH:MM:SS using a 24-hour clock format.

4) **Flight Plan Waypoints**—Flight Plan information from your GPS. Active waypoint is shown in magenta.

   - For Flight Plan waypoints, the following data displays:
     - **WPT**—Waypoint identifier as received from the GPS.
     - **BRG**—Bearing to current waypoint.
     - **DTK**—Desired track to waypoint.
     - **NM** —Cumulative great circle distance of each flight plan leg.
     - **ETE**—Cumulative estimated time enroute to waypoint in H:MM format for each flight plan leg at current ground speed.
     - **ETA—**Estimated time of arrival to waypoint in HH:MM formatted for local time.

Note: For the Garmin 430W, if the parallel track is active, the above data, WPT, BRFDG, DTK, NM, ETE, and ETA are not displayed.

     - **Chart Icon**—Indicates that an Instrument Procedure chart is available for the associated airport. An “I” on the icon indicates that at least one ILS approach chart is available for the associated airport, on the CMax Chart page. Chart icons only display for those airports for which you have JeppView subscription coverage. For more information, see Section 4.1, "About CMax" on page 27.

   - Intermediate waypoints are shown with the prefix Wx:. The Trip Page includes distance (NM), waypoint name, and METAR, if available.

     Intermediate waypoints are determined by your current flight plan. The EX5000 adds intermediate waypoints along your flight path to provide weather information between flight plan waypoints for longer flight plan legs. This can provide you with a fuller picture of enroute conditions.

5) **METAR Symbol**—A METAR report is shown for each flight plan waypoint that uses the same METAR condition symbols as

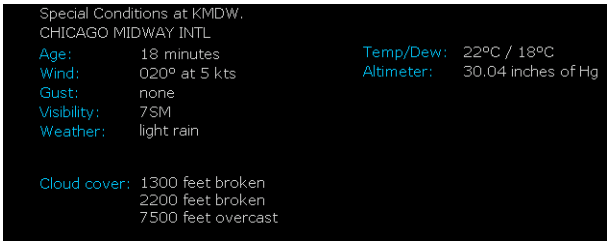
described in Section 2.2, "Map Page Symbols—Terrain and Position" on page 12.

6) **Trip Display Area**—Displays the information that you select with the *Display* button for the selected waypoint, when available.

7) ***Destination Airport* Info**—Provides quick access to airport information for the destination airport, when available.

8) **Display—**Controls the display shown in the lower portion of the screen. The selections are:

- **METAR**—Displays the decoded text METAR for the selected waypoint, when available. If METAR cannot be decoded, raw text METAR will be displayed.



- **Legend**—If Broadcast Datalink is installed, shows the types of data used in graphical METAR and NEXRAD displays.

- **Broadcast Status**
  Time since reception: If Broadcast Datalink is installed and available, displays satellite, signal and serial number information for the Broadcast Datalink system. Also displays the elapsed time since reception of the various types of weather data. If the time since reception for any particular

weather product is greater than the limits defined by the system, a cyan alert message will display in the message box on the Aux Main Page and in the message bar. For example, if 91 minutes has elapsed since the last TAF data was received, a "Broadcast TAFs > 90 min" message will display in the message bar and in the message list on the Aux page. When these messages are displayed, all data for that product is removed from the MFD. The Trip page will indicate that new data for that product has not been received for greater than X minutes, where 'X' is the time limit defined for each product (typically 90 minutes).

Note: Broadcast Datalink times indicated on the Trip page display the time since the product was received by the MFD ("time since reception"). There is an inherent time delay between the creation and reception of the broadcast weather data.

Service Level: The service level appears on the Broadcast Status page. The MFD displays to which service level you have subscribed. Your service level determines how much data is visible on screen.

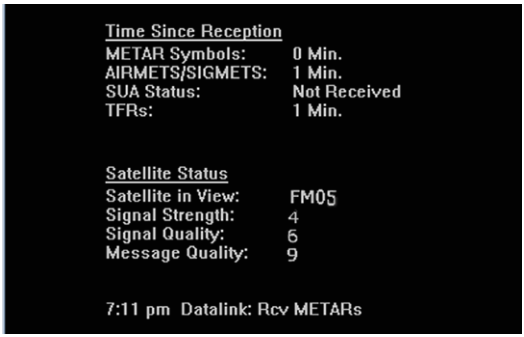
- If you have an MLB700 Broadcast Datalink receiver, one of the following service levels appears on screen: *Avidyne Performance, Avidyne Essentials* or *None*.
- If you have an XM receiver, one of the following appears on screen: *Aviator, Aviator Pro*, or *None*.
- If the MFD cannot determine your subscription level, *Unknown* is displayed.
- If the MLB700 was recently installed in the aircraft and is currently under a 21-day trial subscription, *Test* appears on screen beside Service Level. A message appears on

the message bar and message center to let you know when the trial subscription is about to end.

- **Narrowcast Status**—Displays satellite and signal information for the Narrowcast (ORBCOMM) Datalink system. Also displays the elapsed time since reception of the various types of weather data.

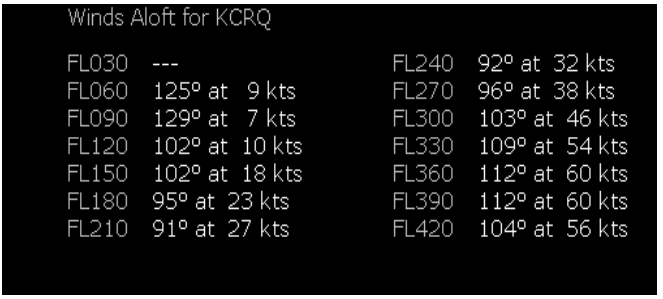
  For Satellite Status, the following information displays:

  - **Satellite in View**—Displays the name of the satellite the system is currently using.
  - **Signal Strength/Signal Quality**—Signal Status represents the overall health of the satellite signal. The higher these values are, the better the signal strength. You should normally see values between 7 and 10.
  - **Message Quality**—Even when the signal strength is good, messages may be dropped if the local interference level is too high. You should see values between 7 and 10 during normal operation.

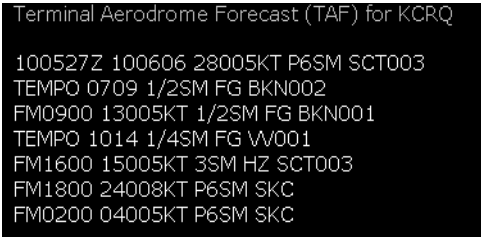


- **Winds Aloft and Freezing Level/Temperatures Aloft**—Depending on your WSI or XM WX service level, displays Winds Aloft and Freezing Level (XM) or Temps Aloft (WSI) data from Broadcast Datalink, if available. The Winds Aloft direction is measured from true (not magnetic) North. Winds are interpolated for each Trip Page waypoint and are based on a computer forecast model that is updated hourly.

  The XM Freezing Level forecast (see figure) displays the expected altitude of the freezing level for the waypoint, while the WSI Temperatures Aloft forecast provides temperature data for each winds aloft flight level.


Winds Aloft for KCRQ
FL030 ---
FL060 125° at 9 kts
FL090 129° at 7 kts
FL120 102° at 10 kts
FL150 102° at 18 kts
FL180 95° at 23 kts
FL210 91° at 27 kts
FL240 92° at 32 kts
FL270 96° at 38 kts
FL300 103° at 46 kts
FL330 109° at 54 kts
FL360 112° at 60 kts
FL390 112° at 60 kts
FL420 104° at 56 kts

- **TAFs**—The EX5000 provides text Terminal Aerodrome Forecasts (TAF) from the National Weather Service via Broadcast Datalink, if available. TAFs are not decoded.


Terminal Aerodrome Forecast (TAF) for KCRQ
100527Z 100606 28005KT P6SM SCT003
TEMPO 0709 1/2SM FG BKN002
FM0900 13005KT 1/2SM FG BKN001
TEMPO 1014 1/4SM FG VV001
FM1600 15005KT 3SM HZ SCT003
FM1800 24008KT P6SM SKC
FM0200 04005KT P6SM SKC

Note: Winds Aloft and TAFs are only available with certain broadcast packages. See the broadcast datalink documentation for more information.

9) Chart—If CMax approach charts are installed and available, provides a quick jump to the Chart Page with the highlighted airport pre-selected. For more information about CMax, see Section 4, "CMax Chart Pages (Optional) " on page 27.

10) **Select Knob**—Use the right knob to move the cursor over the desired waypoint in the flight plan, which selects the plain-text METAR to be displayed along the bottom half of the screen.

Garmin GNS400/500-series users: When the EX5000 is interfaced to a Garmin GNS400/500-series GPS via RS-232, the GPS may send duplicate waypoints while in approach mode. These duplicate waypoints may affect the distance and time readings on the Trip Page. Use the GPS as the primary source of navigation information for approach procedures. Consult your avionics installation facility to determine if your EX5000 is interfaced to the Garmin GNS-430 via ARINC 429 or RS-232.

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6 Nearest Page (NRST)

The Nearest Page displays the nearest airports within 100NM of your present position or the nearest airports to your destination. Through the buttons, you can access detailed information about each airport. The buttons also allow you to view the nearest VORs, NDBs, Intersections, and Obstacles.

6.1 Nearest Page

Figure 6.1 Nearest Page

1) **Airport details**—By default, displays the following details about the airports nearest to your current location:

   - **METAR and Chart Symbols**— Waypoints with METAR reporting stations display a color-coded METAR flag when Datalink is active. If CMax approach charts are installed, a chart icon displays next to any METAR reporting station for which an Instrument Procedure chart is available. An “I” on the icon indicates that at least one ILS approach chart is available. See *Chart*, below, for more information.
   - **ID**—Airport identifier of the airport.

- **BRG**—Bearing to the airport.
- **NM**—Distance to the airport.
- **Freq**—Radio frequency to contact this airport.
- **Name**—Airport common name.

2) **METAR Conditions—** Displays the decoded text METAR for the selected airport when Broadcast Datalink is enabled and a METAR is available.

3) **Airport Info—**Provides quick access to airport information for the airport highlighted. *Airport Info* only appears when viewing the Airports Nearest to Position and Airports Nearest to Destination. Airport Info displays a page similar to Figure 6.2.

4) **TYPE**—Cycles through the various Nearest data types in the following order:

   - **PPOS APT (Airports Nearest Present Position)**—Graphical METARs, airport identifier, bearing, distance from the aircraft present position, frequency, and airport name.
   - **DEST APT (Airports Nearest Destination)**—Graphical METARs, airport identifier, bearing, distance from the aircraft present position, frequency, and airport name.
   - **VORs**—Identifier, bearing, distance, frequency, and name.
   - **NDBs—**Identifier, bearing, distance, frequency, and name.
   - **Intersections—**Identifier, bearing, and distance.
   - **Obstacles**—MSL (and AGL) height, bearing, and distance.

5) **FILTER**—Press to see all airport types (SHOW ALL) or only the airport types as defined on the Airport Filter Page (ON) (see Section Figure 7.2, "Airport Filter Setup Page" on page 57). *Filter* is only visible on the Nearest Airport Pages.

6) **Chart**—If CMax charts are installed and you select an airport that has a chart icon, the Chart button appears, which provides a quick jump to the selected approach charts. For information about CMax, see Chapter 4 "CMax Chart Pages (Optional) ."

7) **Select Knob**—Use the right knob to move the cursor up or down to highlight a specific airport or other data type.

6.2 Airport Info Page

When you press *Airport Info* from the Nearest Page, the Airport Information Page displays for the selected Airport, as shown:

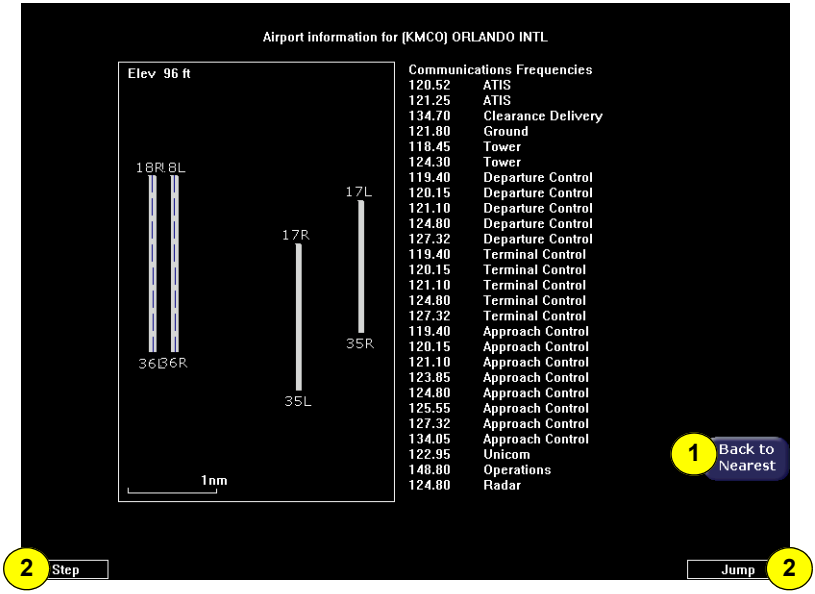

Figure 6.2 Airport Information Page

1) **Back to Nearest**—Returns to the Nearest Page.

2) **Step and Jump Knobs**—If the communications frequencies list is long enough so that it does not fit on a single page, the Step and Jump labels appear on the left and right knobs:

   - **Step**—Scrolls the page one line.
   - **Jump**—Scrolls an entire page (or to the end of the list).

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7 Aux Page – Configuring the EX5000

Use the Aux Page to configure a number of options on your EX5000. From the main Aux Page, you can view informational messages and select the options you want to configure.

This section discusses the following topics:

- *Aux Main Page*, page 55
- *Airport Filter Setup Page*, page 57
- *Declutter Setup Page*, page 59
- *Data Block Edit Page*, page 61
- *System Time Page*, page 63
- *Datalink Configuration Page*, page 65

7.1 Aux Main Page

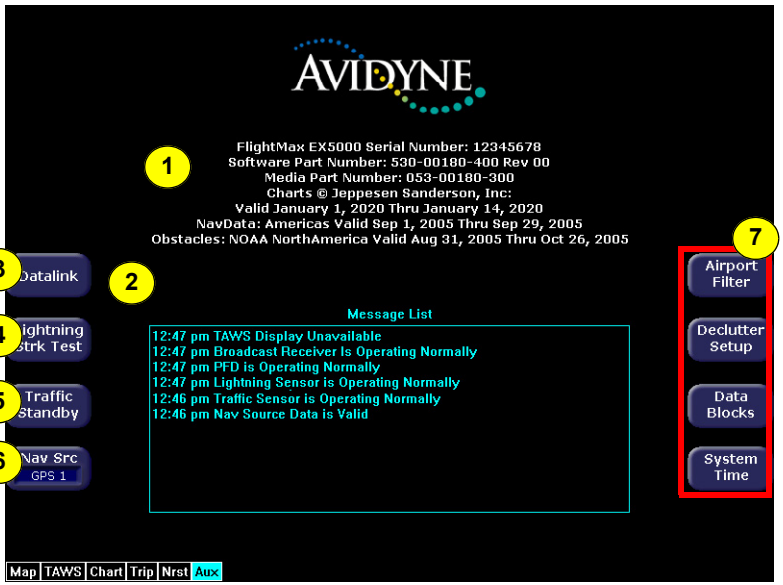

Figure 7.1 Aux Main Page

1) **EX5000 Version Information**—Software part number, serial number, and media part number are displayed here. Expiration dates for on-board databases are also shown on this page.

2) **Message List including sensor status**—A record of the messages displayed in the message bar. If more messages are active than space allows, the right knob allows scrolling.

3) **Datalink Setup**—If only Narrowcast Datalink is installed, this button is labeled *Datalink Setup* and provides configuration options for the Narrowcast Datalink. If both Broadcast and Narrowcast systems are installed, this button is labeled *Datalink* and provides access to both Datalink Messaging and Multilink setup options.

   For information about Datalink Setup, see Section 7.6, "Datalink Configuration Page" on page 65.

   For information about Multilink, see Section 8.8, "About Multilink (Optional)" on page 85.

4) **Lightning Strike Test**—Initiates a self-test of the lightning sensor, if installed.

5) **Traffic Standby/Traffic Self-Test**—If a SkyWatch traffic sensor is installed:

   - *Traffic Standby* switches the sensor back into standby mode only while on the ground. To view traffic data while on the ground press *Traffic* in Map Page.
   - *Traffic Self-Test* replaces *Traffic Standby* after the Traffic sensor has entered Standby. Initiates a 30 second self test of the SkyWatch traffic sensor only while on the ground.

6) **Nav Src**—If your aircraft is equipped with multiple GPS units, switches between GPS1 and GPS2 to provide position information and flight plan data to the moving map.

7) **Setup Menus**—Buttons to select specific setup functions including Airport Filter, Declutter Settings, Data Block Editing, and System Time.

   Scroll Knob—(Not shown) If there are more messages than fit on the current page, Scroll allows you to scroll the message list to see the remainder of the messages.

7.2 Airport Filter Setup Page

The Airport Filter Setup Page allows you to set criteria for nearest airport searches of the database. You can select towered and/or non-towered airports, the type of surfaces you prefer to land on, and the minimum runway length based on your particular aircraft or type of flying. The values selected on this page also dictate the types of airports that get displayed on the map.

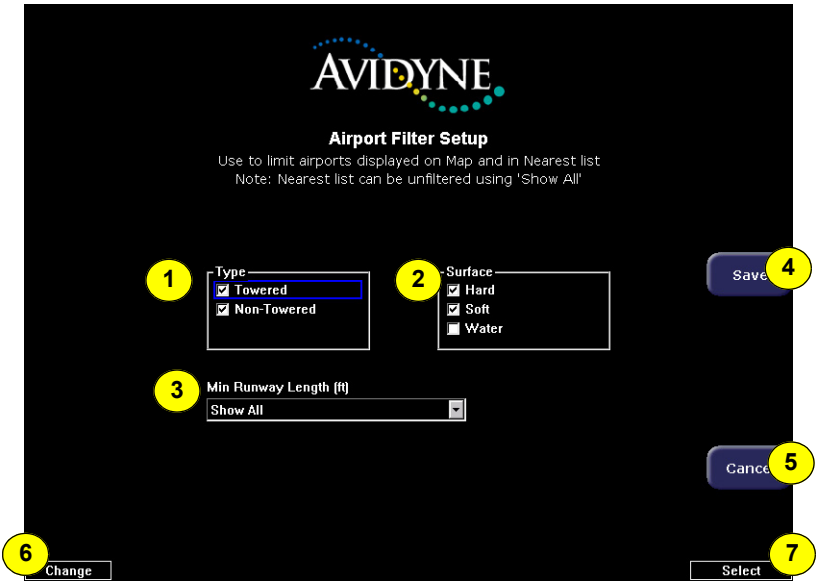

Figure 7.2 Airport Filter Setup Page

1) **Airport Type**—Select Towered, Non-Towered, or both.

2) **Surface**—Select between hard, soft, and/or water surfaces.

Note: To display airports with both hard surface and water runways check the hard surface box.

3) **Minimum Runway Length**—select the minimum runway length from 2000ft.—7000ft. or show all lengths.

4) **Save**—Saves settings and returns to the Aux Main Page.

5) **Cancel**—Cancels any changes and returns to the Aux Main Page.

6) **Change Knob**—The left knob changes the value or status of the selected field.

7) **Select Knob**—The right knob moves the blue field selector.

7.3 Declutter Setup Page

The Declutter Setup Page is used to define the navigation symbols and other default display settings for the *Declutter* button. Individual items can be selected for display or a pre-defined group of items can be selected by choosing VFR or IFR defaults.

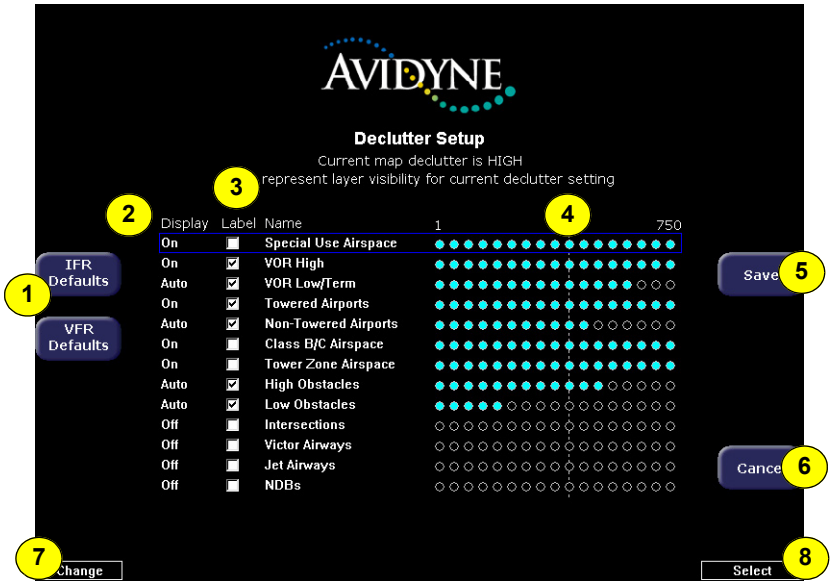

Figure 7.3 Declutter Setup Page

1) **IFR & VFR Defaults**—Sets the declutter settings to predefined factory settings based on typical usage.

2) **Display**—Each item has three possible display settings:

   - **On**—The item displays all the time.
   - **Auto**—The item displays automatically and declutters automatically based on pixel density of the display at a given range.
   - **Off**—The item is never displayed.

Note: The EX5000 may limit the number of symbols displayed based on the total symbol density.

3) **Label**—A check in the label box indicates that the item name will be displayed along with the symbol.

4) **Range Dots**—The circles represent the seventeen available map scales. A cyan-colored circle indicates that the item is displayed at that range. The vertical dash line indicates the map current scale.

> **Note:** The 1000NM and 1500NM columns are not displayed because this data is never displayed at these ranges.

5) **Save**—Saves settings and returns to the Aux Main Page.

6) **Cancel**—Cancels any changes and returns to the Aux Main Page.

7) **Change Knob**—The left knob changes the value or status of the selected field.

8) **Select Knob**—The right knob moves the blue field selector.

> **Note:** If all display elements are forced on via the Declutter Setup Page, the quick declutter setting on Map Page is set to maximum, and the Map Range is set greater than 400NM, Map performance may be slow, and in some cases, may cease to operate. If this occurs, you will need to recycle the EX5000 power to restore functionality.
>
> To avoid this situation, Avidyne suggests that you select the IFR or VFR Default declutter setting.

7.4 Data Block Edit Page

Data blocks in the upper corners of the Map Page can be edited to display information from a list of available data types. A series of dashes represents data that is invalid or unavailable.

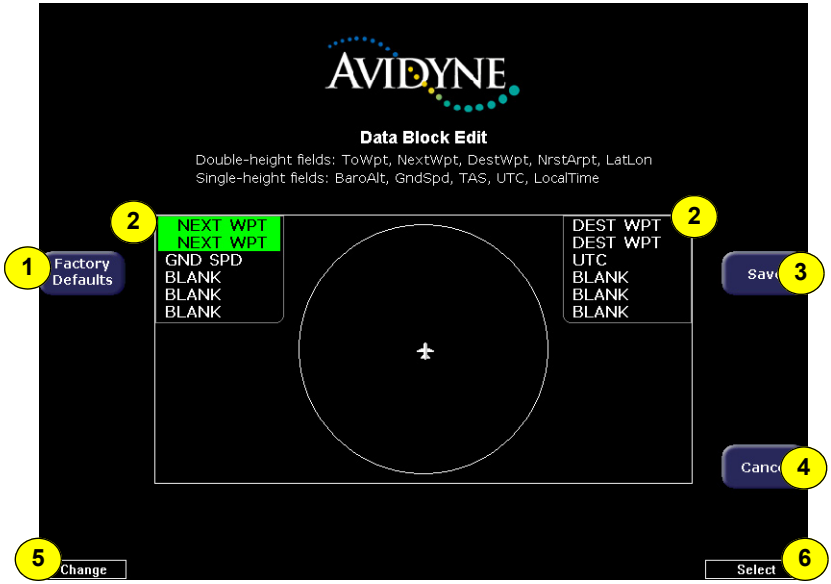

Figure 7.4 Data Block Edit Page

1) **Factory Defaults**—Resets the Data Blocks to the original display mode.

2) **Left & Right Data Blocks** — The Upper Left and Upper Right Data Blocks are user-configurable data blocks that appear in the upper left and upper right of the Map Pages. You can keep these data blocks at the default factory configuration or you can customize the data that appears in the data blocks. The factory default uses the data blocks as follows:

   - Upper left contains engine and fuel data
   - Upper right contains navigation data.

   Each data block can have as many as 6 lines of data. If you configure BLANK lines, the data block is resized to show only

lines with valid data. The data block disappears if all lines are set to BLANK.

For information on the fields available in the data blocks, see Section 9.7, "Data Blocks" on page 114."

3) **Save**—Saves settings and returns to the Aux Main Page.

4) **Cancel**—Cancels any changes and returns to Aux Main Page.

5) **Change Knob**—The left knob changes the value or status of the selected field.

6) **Select Knob**—The right knob moves the green field selector.

7.5 System Time Page

The System Time Page allows you to set the “time zone offset” based on your location relative to UTC. In addition, you can set the amount of time the button labels stay up on the Map Page before decluttering or set to never declutter.

Before conducting flight operations, verify that time and date settings are correct and in GMT (UTC). It is critical that the time be set to the correct GMT to provide accurate display of Datalink weather.

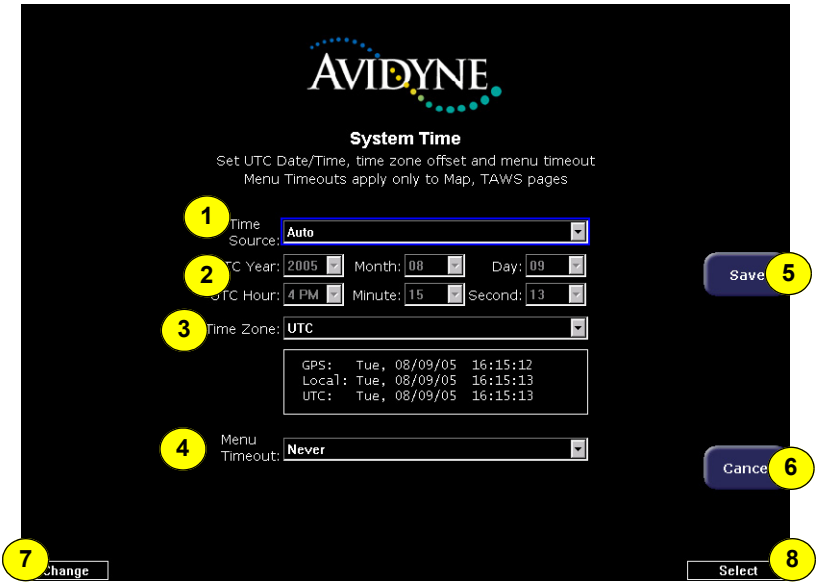

Figure 7.5 System Time Page

1) **Time Source**—Select the time source. If “Auto” is selected, the EX5000 will first try to receive current time data from the attached GPS unit. If the GPS signal is not available, it will try to receive current time data from Narrowcast Datalink. If neither are available, the EX5000 will use the last known time data.

2) **Time and Date Setting**—If manual time source is selected, it allows you to manually adjust the current UTC value.

3) **Time Zone**—Set the time zone for your location, based on an offset from UTC.

Note: The EX5000 maintains a constant offset from UTC and does not adjust local time for daylight savings.

Note: If the EX5000 time has drifted noticeably from the current GPS time, ensure the GPS unit(s) are receiving valid GPS information by re-synching the EX5000 time as follows:

- Enter the System Time Page.
- Change the "Time Source" setting from "Auto" to "GPS"
- Return the setting to "Auto" and press the "Save" button.
- If the "Time Source" was previously not set to "Auto", change the setting to "Auto" and press the "Save" button.

4) **Menu Timeout**—Set the amount of time that the menus remain visible on Map Page from the following choices (in seconds): 2, 5, 10, 20, 30, 40, 50, 60, Never.

5) **Save**—Saves settings and returns to the Aux Main Page.

6) **Cancel**—Cancels any changes and returns to the Aux Main Page.

7) **Change Knob**—The left knob changes the value or status of the selected field.

8) **Select Knob**—The right knob moves the blue field selector.

7.6 Datalink Configuration Page

The Datalink Configuration Page allows you to set Datalink options, including enabling Multilink. Multilink leverages the capabilities of the internal Narrowcast Datalink receiver when an external Broadcast Datalink is also installed. Multilink expands the available weather coverage areas, as well as adding new features such as text messaging

➤ To access the Datalink Configuration Page, press *Datalink* from the Aux Main Page:

- If Broadcast Datalink is installed, the Datalink Messaging Page displays. From the Datalink Messaging Page, press Datalink Setup to configure Multilink. For information about Datalink Messaging, see Section 8.9, "Datalink Messaging (Optional)" on page 91.
- If Broadcast Datalink is not installed, the Datalink Configuration Page displays directly.

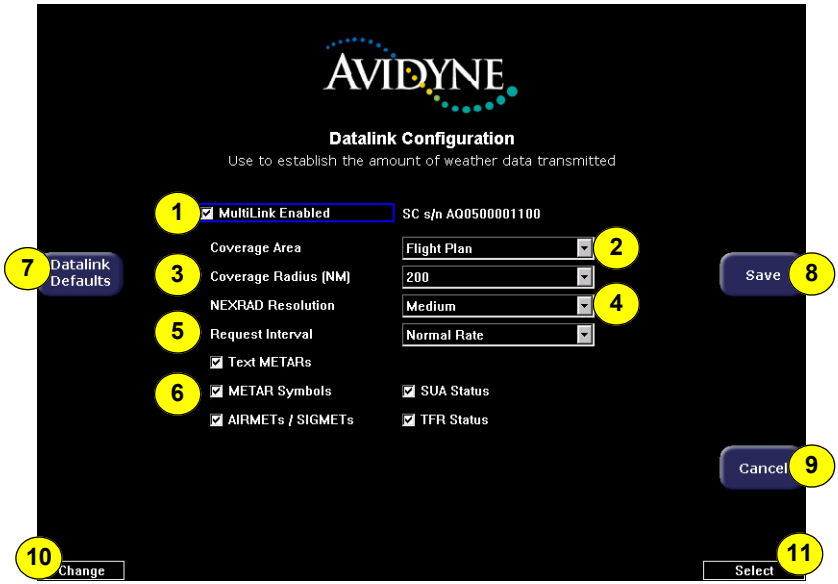

Figure 7.6 Datalink Configuration Page

1) **Multilink/Datalink Enabled**—If both Broadcast and Narrowcast Datalink receivers have been installed, you can click the *Multilink Enabled* checkbox to turn on Multilink.

   Setting Multilink to Enabled "arms" Narrowcast Datalink so that it will automatically provide weather data if the Broadcast system is unable to do so. In addition, both Datalink Messaging and Flight Tracking require that Multilink be Enabled, although in these cases no weather data types need be selected.

   If Broadcast Datalink is not available, the checkbox will read *Datalink Enabled*, which enables Narrowcast Datalink to transmit the select weather information.

Note: If the Broadcast system becomes unusable or unavailable, the types of weather data enabled on the Datalink configuration page are automatically set via Narrowcast.

2) **Coverage Area**—Switches weather coverage area between "Current Position" and "Flight Plan."

3) **Coverage Radius (NM)**—Selects 50, 100, 200, 300 or 400 nautical mile radius around the aircraft or flight plan as the display area for depicting weather.

4) **NEXRAD Resolution**—Selects High, Medium, Low, and Off NEXRAD resolution. The "Low" setting uses the least message units and "Off" setting turns the NEXRAD requests and overlay off.

5) **Request Interval**—Selects the time between weather updates. Options are: High, Normal, and Hourly update intervals. High Rate provides weather updates as soon as they become available.

6) **Additional Data Reporting**—Allows you to turn on or off the display of the following data on the Map Page:

   - **Text METARs**
   - **METAR Symbols**
   - **AIRMETs / SIGMETs**
   - **SUA Status**
   - **TFR Status**

7) **Datalink Defaults**—Sets the Datalink Configuration Page to the following values:
   - **Coverage area**—Flight Plan
   - **Coverage Area**—200 NM
   - **NEXRAD Resolution**—Medium
   - **Request Interval**—Normal Mode
   - **METARS and AIRMETS/SIGMETS** —ON
   - **SUA Status/TFRs**—ON
8) **Save**—Saves your changes and returns to the previous page.
9) **Cancel**—Returns to the previous page without saving your changes.
10) **Change Knob**—The left knob changes the value or status of the selected field.
11) **Select Knob**—The right knob moves the blue field selector.

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8 Using Datalink (Optional)

This section discusses the following topics:

- *About Datalink Services*, page 69
- *Overview of Datalink Weather*, page 71
- *About Narrowcast Datalink (Optional)*, page 73
- *About Broadcast Datalink*, page 76
- *Map Page with Datalink Weather*, page 78
- *Trip Page with Datalink Weather*, page 83
- *Nearest Page with Datalink Weather*, page 84
- *About Multilink (Optional)*, page 85
- *Datalink Messaging (Optional)*, page 91

8.1 About Datalink Services

For the EX5000, Avidyne offers three types of Datalink service:

- **Narrowcast Datalink**—Narrowcast Datalink is provided via a built-in transceiver that uses two-way messaging and receives data from the ORBCOMM satellite system. (However, not all EX5000 MFDs are manufactured with built-in transceivers.) For more information, see Section 8.3, "About Narrowcast Datalink (Optional)" on page 73.
- **Broadcast Datalink**—Broadcast Datalink is provided via an optional external receiver that receives weather data via WSI or XM WX satellite weather. For more information, see Section 8.4, "About Broadcast Datalink" on page 76.

Use Datalink weather only for strategic planning purposes. Do not use the EX5000 to penetrate severe weather, thunderstorms, cells or lines of cells.

Datalink does not qualify as (and is not intended to replace) an FAA-approved weather briefing. Do not rely upon Datalink to replace pre-flight or inflight briefings and other sources.

- **Multilink**—When both Narrowcast and Broadcast Datalink systems are installed and enabled, you can enjoy Avidyne's unique Multilink features which include expanded coverage areas

and in-flight Text Messaging. For more information, see Section 8.9, "Datalink Messaging (Optional)" on page 91.

8.2 Overview of Datalink Weather

For most operations, the EX5000 displays weather data the same way regardless of which Datalink system is in use. Both Narrowcast and Broadcast systems can provide:

- **NEXRAD**—A composite image depicting precipitation as seen by multiple ground-based weather radar sites. The image is color-coded to show both intensity levels and precipitation types. The "WX OVLY" button on the Map Page cycles between Narrowcast NEXRAD and Broadcast NEXRAD, as available.
- **Text METARs**—The full text of recent surface weather observations. Text METARs appear on the Trip Page. With Broadcast Datalink, Text METARs also appear on both types of Nearest Airport Pages: Nearest to Position, and Nearest to Destination. If the METAR parser fails, raw text METAR will be displayed.
- **Graphical METARs**—Color-coded flag symbols that summarize a recent surface weather observation. Graphical METARs appear on the Map Page, Trip Page, and on both types of Nearest Airport Pages. They allow a "big-picture" view of general weather conditions in an area. The presence of a graphical METAR does not necessarily mean that the corresponding Text METAR is viewable.
- **AIRMETs and SIGMETs—**Areas for which the National Weather Service has issued advisories for various types of hazardous weather. These areas are depicted on the Map Page, along with an abbreviated description of the hazard, such as "ICE" (icing), "MTN" (mountain obscuration) or "IFR" (instrument flight conditions.)
- **TFRs**—Temporary Flight Restrictions are areas depicted on the Map Page for which the FAA has issued some type of flight restriction. Contact a local Flight Service Station (FSS) for information. The EX5000 does not display any details of the flight restriction.

The Optional Narrowcast Datalink can also provide the effective times and dates of the Special Use Airspace (SUA) contained in the EX5000's navigation database, allowing the Map Page to differentiate between active ("hot") and inactive ("cold") areas.

Depending on your level of service, Broadcast Datalink can provide Winds Aloft, TAF, storm cell and lightning strike data. Broadcast lightning data allows the Map Page to display *Datalink* as a source of strike data controlled by the *Lightning* button.

When you power-up the EX5000 with Datalink enabled, weather data automatically begins transferring to your airplane via the satellite networks. No further action is required on your part (if necessary, you may have to move your airplane out of the hangar so that the satellite receiver can “see” a satellite).

For information about setting up Datalink, see Section 7.6, "Datalink Configuration Page" on page 65.

8.3 About Narrowcast Datalink (Optional)

Some EX5000 MFDs are shipped with a built-in Narrowcast Datalink transceiver, which offers the most affordable satellite-based weather delivery system available. Narrowcast uses two-way messaging to send your flight plan to the Avidyne Network Operations Center (NOC), which then sends you only the data pertinent to your flight and provides a web-based flight tracking capability. Due to variability in the ORBCOMM satellite signal used by Narrowcast, weather update rates may vary.

8.3.1 Setting up a Narrowcast Account

To activate and use Narrowcast Datalink, visit www.MyAvidyne.com and follow the simple account setup instructions to immediately activate your system. Several different price plans are available, including a no-minimum, pay-as-you-go plan and a flat-rate unlimited usage plan. You will need to provide your Datalink subscriber communicator (SC) serial number, which can be found on the Datalink Configuration Page, described in Section 7.6, "Datalink Configuration Page" on page 65. Write this number down on the first page of this manual for future reference.

Your MyAvidyne account provides access to your billing and usage statements. You can also set your Narrowcast Datalink user preferences online prior to your flight, and they will be downlinked to your EX5000 via satellite the next time you fly.

8.3.2 Flight Tracking

Regular automatic aircraft position reporting is built in to the Narrowcast system. Your MyAvidyne account page provides a list of past flights, from which you can view a map showing departure and destination airports and approximate route of flight. In addition, the website password you create will allow others to view a similar map of a flight in progress.

8.3.3 Using Narrowcast Datalink in Flight

When you turn on the EX5000, it immediately begins to send position data to the satellite network to indicate where you are and that you are about to begin a flight. Weather data is sent to your airplane based upon user preferences – no action is required to begin receiving weather.

Note: To function correctly, the satellite receiver must have a clear view of the sky, and generally will not work inside a hangar.

Note: There may be occasions when Narrowcast satellites are not in view while on the ground and in flight, which may result in delayed transmissions of Datalink information.

When you enter a flight plan or a direct-to waypoint, the EX5000 automatically downloads the weather for your route of flight. Additional updates are provided in flight based on the settings that you select either online or on the Datalink Setup Page. The boundary of the available NEXRAD data is shown with diagonal stripes.

Narrowcast can provide NEXRAD data within the contiguous United States (CONUS) as well as portions of Canada and Mexico. NEXRAD coverage is bounded by the following limits:

- **North**—52 degrees N
- **West**—127 degrees W
- **South**—22 degrees N
- **East**—63 degrees W

METARs are provided for CONUS, all of Canada, Mexico and the Caribbean.

8.3.4 Loss of Satellite Coverage

For normal atmospheric causes and for occasional satellite maintenance periods, the satellite and/or Network Operations Center may be inoperative for some period of time. If this occurs during your flight, revert to traditional methods of gathering weather data. The loss of satellite coverage for your Datalink function will not adversely effect the remaining navigation, map, and other functions of your EX5000. If installation problems and/or satellite network problems do occur, you will be able to determine this by observing:

- That you are no longer receiving any weather, SUA or TFR data.

- The *Satellite in view* field on the Trip Page indicates “NONE” (this is normal for brief periods during normal operations – usually no more than 5 minutes).
- All signal strength indicators are dashed (“- - -”).

There is no pilot action that can be taken to re-acquire a satellite in the event of satellite and/or network problems. The EX5000 will continue to try to acquire satellites as long as Datalink is enabled. Normal operation will automatically resume once a satellite is re-acquired.

8.4 About Broadcast Datalink

The optional external Broadcast Datalink receiver receives a constant stream of weather data for the entire United States via XM WX or WSI satellite weather. Broadcast Datalink requires a fixed monthly subscription, available from XM WX Satellite Weather, a service of XM Radio or Sirius for WSI. Due to the higher power and bandwidth of the XM or Sirius satellite signal, Broadcast weather update rates are more predictable than Narrowcast and will generally provide the greatest availability of weather data.

8.4.1 Setting up a Broadcast Datalink Account

If you have a Broadcast Datalink receiver installed, you must purchase service from WSI or XM Satellite Radio to automatically activate the receiver. See Section 9.2, "Broadcast Datalink Service Purchase and Activation" on page 103 for information about broadcast satellite weather.

8.4.2 Using Broadcast Datalink in Flight

The Broadcast Datalink receiver continuously receives all weather data for the entire contiguous United States (CONUS). It is not necessary to enable or disable the receipt of individual types of data. The display of the received data is controlled on the appropriate Pages: Map, Trip or NRST.

8.4.3 About Broadcast Datalink Weather

Weather data coverage from the XM WX or WSI satellite weather includes the continental United States. Outside this area, weather information is not provided. The boundary of the coverage area is shown on the Map Page as a “hatched” pattern (See Figure 8.1).

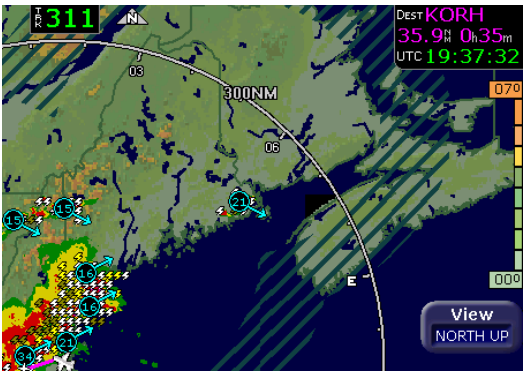


Figure 8.1 Broadcast Datalink Weather Boundaries

Some remote areas of the United States may not have NEXRAD coverage. See the Aeronautical Information Manual (AIM) for more information on NEXRAD coverage areas.

Note: If your weather data subscription has recently been activated, the Service Level may temporarily be displayed as, “None defined”, until the Datalink receiver confirms your Service Level. This process may take a day or two, but you will still receive Datalink weather information. Until the Service Level has been confirmed, your Broadcast Datalink receiver will enter an “activation mode” to confirm the Service Level, which will cause a delay in receiving weather data.

8.4.4 How the MFD Handles Partially Missing WSI Messages

WSI sends its weather data in regional tiles, which are then assembled by the MFD to provide a full, nationwide picture of the current weather. In rare circumstances, transmission problems can cause some of these tiles to be lost. You can recognize lost tiles as any or all of the following screen conditions: rectangular areas of NEXRAD, graphical METARs missing on the Map page, or some METARs and TAFs not available on the Trip page.

As soon any portion of a message is received, the MFD displays METARs and TAFs and continues to fill in missing data as it is received from the Sirius network.

If a NEXRAD update is missing a tile, but the MFD has received all the data in a 360 nm radius around the aircraft's present position, the MFD displays the radar image on the Map. The MFD displays any missing data as "no data" hash marks.

8.5 Map Page with Datalink Weather

The Map Page is the primary display for the Datalink weather information. Displayed on the Map Page are NEXRAD radar images, lightning strike information, AIRMETs/SIGMETs, graphical METAR symbols, and TFRs.

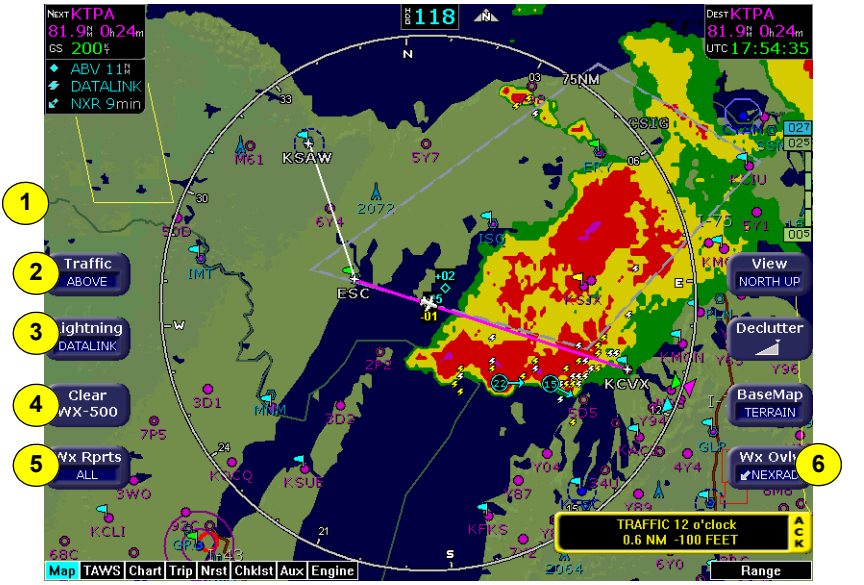


Figure 8.2 Datalink Weather—Map Page

1) **Sensor Status Block**—The Sensor Status Block gives the status of the weather information presented. The Lightning sensor status reflects whether the lightning information displayed on the Map is from Datalink or from an on-board lightning sensor, if installed. If space is available, the Datalink sensor status, which includes the age of the most recent NEXRAD radar image, is shown on the bottom line of the upper block. If optional sensors are installed, the Datalink sensor icon is displayed in the lower left portion of the screen.

   For more information about the Sensor Status Block icons, see Table 9.1 Sensor Status Block Symbols on page 108.

2) **Traffic**—Cycles through traffic sensor modes.See Chapter 3 "Traffic Mode and the Traffic Page ," for more

information on traffic modes. This button is only available when a traffic sensor is installed.

3) **Lightning—**Depending on your broadcast service level, controls the display of lightning information on the Map Page. When Broadcast Datalink is not installed, lightning data can still be obtained from a WX-500 Stormscope or TWX-670. For more information, see Section 2.1, "Map Page—Controls" on page 8.

4) **Clear Strikes—**Clears the current lightning strike symbols from the screen for WX-500 or TWX-670, if installed. Does not clear Datalink Lightning. This button is only available when a TWX-670 or WX-500 lightning sensor is installed.

5) **Wx Rprts—**Depending on your broadcast service level, controls the display of METAR symbols, AIRMETs, and SIGMETs on the Map Page. Press the button to cycle through All, METARS, SIGMET, AIRMET, and Display Off. If METARS or AIRMETS/ SIGMETS are disabled from the Datalink Configuration Page, these options will not be displayed on the Wx Rprts button.

6) **Wx Ovly—**Controls the display of the NEXRAD overlay on the Map Page. Press the button to toggle between Broadcast NEXRAD radar images, NEXRAD with storm cells (NEXRAD+), and Display Off.

   - NEXRAD — Displays Broadcast NEXRAD information on the map. Depending on your Broadcast Datalink service level, the NEXRAD overlay also displays Storm Cell symbols when significant weather formations are determined by the weather provider.
   - NEXRAD+ — The (+) plus option shows broadcast NEXRAD overlay with storm cell icons. This option may not be available depending on your broadcast subscription level.
   - **DSPLY OFF** — Removes all NEXRAD data from the map display.

8.5.1 Symbols Displayed using Datalink

This section describes the symbols displayed using Broadcast Datalink. Figure 8.3, below, displays many of the Broadcast Datalink symbols (though one hopes you are not flying in similar weather). For a complete list of Map symbols, see Chapter 2 "Map Page."

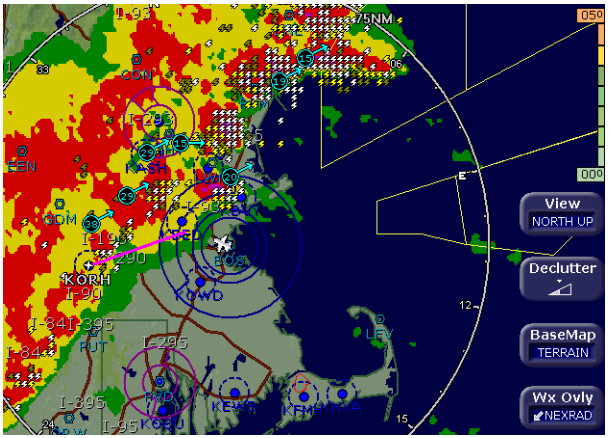
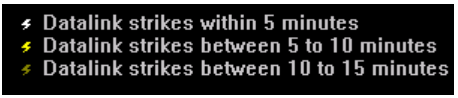
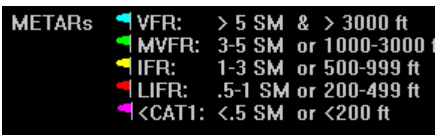


Figure 8.3 Broadcast Datalink Weather

- **Lightning strike symbols**—Depending on your broadcast service level, lightning information from broadcast datalink weather is matched to grid coordinates with a resolution of approximately 2 NM. Overlapping lightning symbols may be decluttered for clarity:



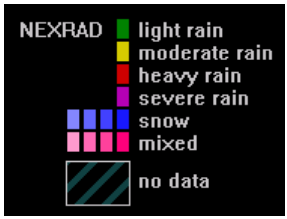
- **METAR symbols**—Each METAR reporting station shown on the Map Page will have a METAR condition flag displayed. The color of the METAR flag indicates the current conditions at that airport:



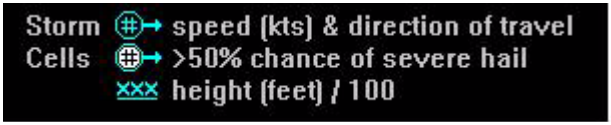
- **AIRMETs/SIGMETs**—Depending on your broadcast service level, AIRMETs and SIGMETs are shown as ribbed lines enclosing the area of the advisory and are color coded and

labeled as to their type. For more details, see Section Table 9.7, "Airspace and Airways Lines" on page 112.

- **NEXRAD Radar Images**—The WSI and XM satellite weather NEXRAD images are delivered with a resolution of approximately 1 NM. The EX5000 smooths the edges of the NEXRAD images, so that the images are not distracting at smaller zoom ranges. The NEXRAD colors conform to aviation standards: green, yellow, red, and magenta depict varying intensities of rainfall, and shades of blue for snow and pink for mixed precipitation. A handy legend for the NEXRAD colors is found on the Trip Page:



- **Storm Cells**—If storm cells are present, the EX5000 displays the cells along with the cell's groundspeed, in knots, and direction of travel. If there is a greater than 50% chance of hail, the cell displays with a white background. It also shows echo tops.



- **TFR**—Temporary Flight Restrictions (TFRs) are reported over the Broadcast Datalink. TFRs are shown with solid red lines on the Map Page. Note that at a full Map Declutter setting (all navigation data and airspace removed), TFRs will also be removed from the display.

8.5.2 Using Datalink without a Traffic Sensor

Without a Traffic sensor installed, the EX5000 takes advantage of the available buttons and the *WX Reports* button is split into two buttons, *Air/Sig* and *Metars*, as shown below.

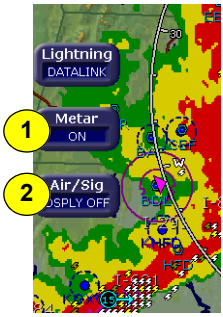


Figure 8.4 Datalink Weather without Traffic Sensors

1) **Metar**—Controls the display of the graphical METAR symbols on the Map Page. Press *Metar* to toggle between ON and DSPLY OFF.

2) **Air/Sig**—Controls the display of AIRMETs and SIGMETs. Press *Air/Sig* to cycle between ALL, AIRMET, SIGMET, and DSPLY OFF.

If either METAR or AIRMET/SIGMET displays are disabled on the Datalink Configuration Page, the corresponding button does not display on the Map Page. For more information, see Section 7.6, "Datalink Configuration Page" on page 65.

8.6 Trip Page with Datalink Weather

The EX5000 Trip Page also displays weather information from the weather Datalink. Each waypoint on the current active flight plan is associated with a METAR reporting point. For non-airport waypoints, the nearest METAR is used. The general conditions are reported with the same METAR flags as used on the Map Page, here shown in a column for each waypoint. If legs on the flight plan exceed 100 miles in length, the EX5000 selects “intermediate waypoints” in between the waypoints of the leg, to provide greater situational awareness of the weather conditions along the route.

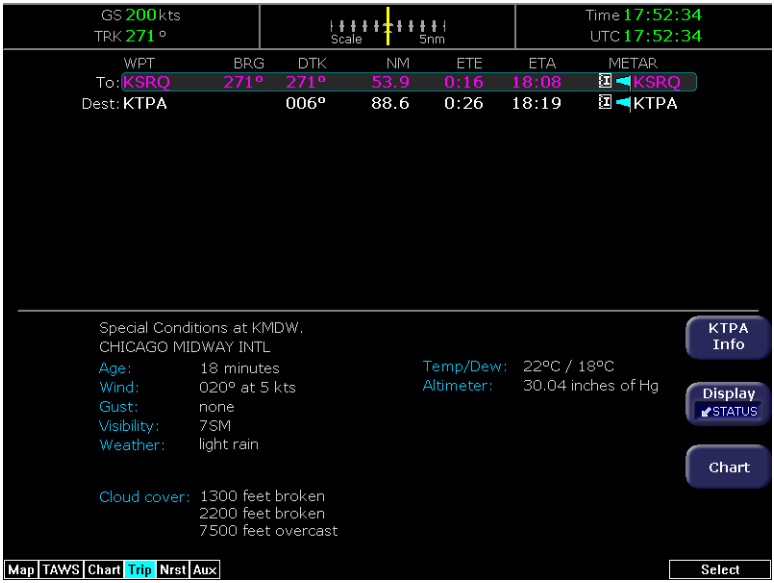


Figure 8.5 Trip Page with Datalink Weather

For information about Datalink weather on the Trip Page, see the *Display* button description in Chapter 5 "Trip Page”.

8.7 Nearest Page with Datalink Weather

The EX5000 Nearest Page also displays METAR information received via Datalink. Similarly to the Trip Page, the METAR symbols are displayed in a column next to the Nearest airports list, for all airports that have weather reporting stations. Airports that do not report METARs do not have a METAR symbol shown.When Broadcast Datalink is enabled, the text METAR for the currently selected airport is displayed on the lower half of the Nearest Page.

Airports Nearest to Position
ID BRG NM Freq Name
KRGK 018 4.6 123.05 RED WING REGL
KSYN 262 21.4 122.80 STANTON
KSGS 312 29.9 122.70 SOUTH ST PAUL MUN-FLEMING
KLVN 281 31.1 123.00 AIRLAKE
21D 332 32.2 122.80 LAKE ELMO
KTOB 203 32.8 122.90 DODGE CENTER
KSTP 316 34.0 119.10 ST PAUL DOWNTOWN-HOLMAN
KLUM 050 35.9 122.70 MENOMONIE MUN-SCORE
KFBL 250 35.9 122.80 FARIBAULT MUN
KRST 177 36.6 118.30 ROCHESTER INTL
METAR Conditions at KRGK.
Age: 30 minutes
Wind: 110° at 3 kts
Gust: none
Visibility: 10SM
Weather: light rain
Temp/Dew: 21°C / 19°C
Altimeter: 29.93 inches of Hg
Cloud cover: 1300 feet broken
Airport Info
Type
PPOS APT
Filter
ON
Chart
Map TAWS Chart Trip Nrst Aux Engine
Select

Figure 8.6 Nearest Page with Broadcast Datalink

For more information about the Nearest Page, see Chapter 6 "Nearest Page (NRST) on page 51.

8.8 About Multilink (Optional)

For EX5000 MFDs that feature an internal satellite transceiver, the Avidyne Multilink feature leverages the capabilities of the optional internal Narrowcast Datalink receiver when Broadcast Datalink is also installed. Multilink expands the weather coverage areas, as well as adding new features such as Datalink Messaging.

8.8.1 Using Multilink

Avidyne's Multilink features are available only on installations with *both* Narrowcast (ORBCOMM) and Broadcast (XM) Datalink systems active. Multilink offers the following features:

1) **Expanded Coverage**—Broadcast Datalink only includes data for areas within CONUS (the lower 48 United States). With Multilink enabled, the Narrowcast system will automatically provide weather data when your flight plan extends outside of CONUS. See Section 8.4.2, "Using Broadcast Datalink in Flight" on page 76 for a description of the Narrowcast service area.

2) **Datalink Messaging**—The unique 2-way Narrowcast system provides simple text messaging between the flightdeck and a password-protected page on www.MyAvidyne.com. You control access to this page by creating a password which is used by anyone with whom you want to exchange messages during flight.

3) **Backup**—The Narrowcast system automatically provides weather data if the Broadcast receiver has failed, if the Broadcast network is unavailable or if you have simply cancelled your Broadcast subscription.

8.8.2 Setting up a Multilink Account

To set up a Multilink account, you first need to have your Narrowcast and Broadcast Datalink accounts activated. See Section 8.3.1, "Setting up a Narrowcast Account" on page 73 and Section 8.4.1, "Setting up a Broadcast Datalink Account" on page 76.

Once these accounts have been activated, the Network Operations Center (NOC) will automatically detect a Multilink configuration and enable the features accordingly. You can turn Multilink on or off from the Datalink Configuration Page, described in Section 7.6, "Datalink Configuration Page" on page 65.

8.8.3 Using Multilink Features

- **Expanded Coverage**—When Multilink is enabled, the EX5000 sends the current destination and flight plan to the Avidyne Network Operations Center (NOC) just as it does with standard Narrowcast. On a Multilink-enabled unit, however, the NOC only starts sending weather data if it determines that the desired Narrowcast coverage area extends outside of CONUS. In that event, the NOC starts sending Narrowcast weather. Whether in Flight Plan or Current Position mode, the NOC will send the selected weather data for the selected coverage area.
- **Backup—**When Multilink is enabled, the EX5000 checks the status of the Broadcast system at power up and every 10 minutes thereafter. If the Broadcast system becomes unusable or unavailable, the types of weather data enabled on the Datalink Setup Page will automatically be sent via the Narrowcast system.
- **Datalink Messaging**—Datalink Messaging is described in detail in Section 8.9, "Datalink Messaging (Optional)" on page 91.

8.8.4 Viewing Multilink Data

NEXRAD Data

If NEXRAD is received from both Narrowcast and Broadcast, there will be a separate NEXRAD overlay available for each on the Map Page. Press WX OVLY to cycle through the available NEXRAD radar displays.

As an example, consider a flight from Caribou, ME to Pellston, MI. Even though this flight originates and ends within CONUS, a large portion of the route is over Canada and outside the coverage area of Broadcast Datalink.

Figure 8.7 on page 87 shows the Map Page seen on a Broadcast Datalink-only unit for this flight, and Figure 8.8 shows the same page on a Multilink-enabled unit with the Narrowcast NEXRAD overlay selected. Note the difference in the hatched area of both images, which clearly shows the expanded coverage area of Narrowcast. In this case, some very significant weather sat just outside the Broadcast NEXRAD area. With Multilink, NEXRAD for your flight plan coverage area can extend far beyond the limits of Broadcast Datalink.

All weather data other than NEXRAD (i.e. Text and Graphical METARs, AIRMETs, SIGMETs and TFRs) are depicted as usual, whether received from Broadcast or from Narrowcast. No specific action is required to choose between Datalink systems for this data.

Note: The following images are from a different model of the Avidyne MFD, but the concepts shown are identical.

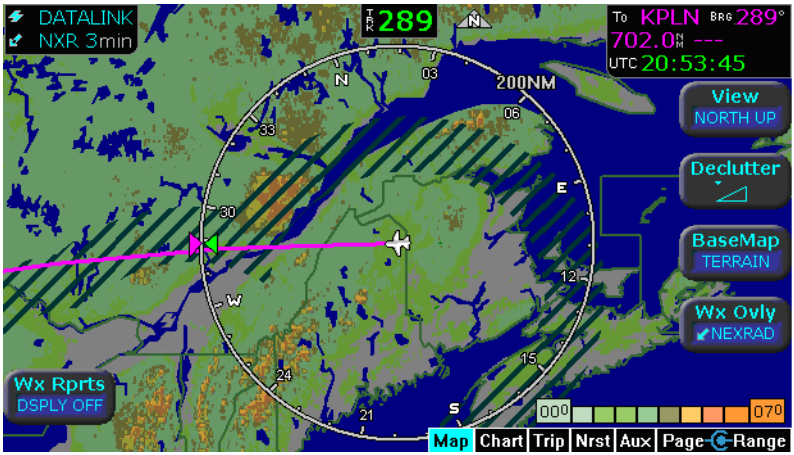


Figure 8.7 Broadcast Datalink NEXRAD Coverage

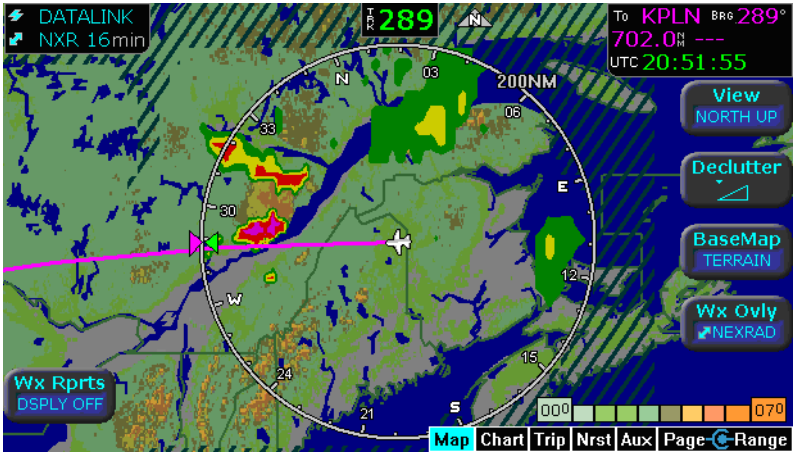


Figure 8.8 Narrowcast and Broadcast Datalink NEXRAD Coverage

METAR Data

In addition to providing a second NEXRAD view, Multilink can provide more weather information in the form of graphical METARs. In this case, no manual selection is necessary. With Multilink enabled, Canadian METAR data obtained via Narrowcast is simply added to the EX5000's available pool of data and is displayed along with Broadcast data.

Consider a flight from Watertown, NY to Pellston, MI. Again, this route is largely over Canada. While Broadcast NEXRAD covers this route fairly well, there are no Canadian METAR reports received via Broadcast Datalink. Note the expanded graphical METAR coverage in Canada provided by the Multilink system in the following images:

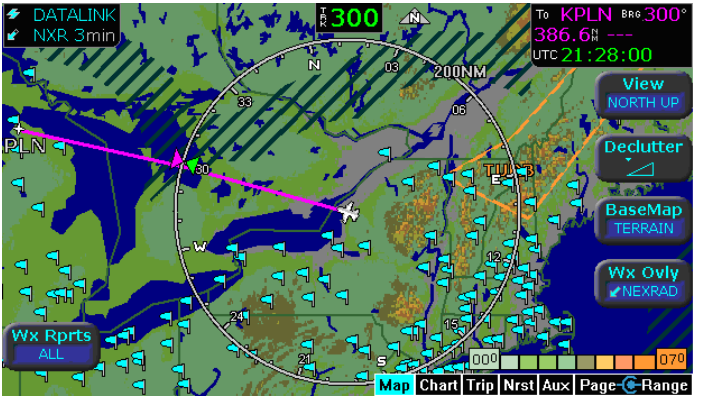


Figure 8.9 Broadcast Datalink, without Canadian METARs

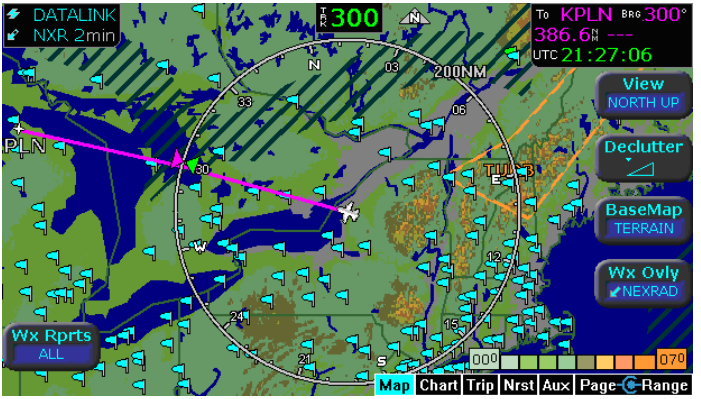


Figure 8.10 Multilink Datalink with Canadian METAR flags

8.8.5 Optimizing your Multilink Setup

Your Multilink setup can be fine-tuned to provide the Multilink features you desire.

In general, Narrowcast obtains the best performance when the amount of data being requested is limited to only what is necessary. If, for example, large amounts of weather data are requested, the performance of Datalink Messaging may suffer. Remember too, that your Narrowcast Datalink account is charged for all weather data sent, even if it is redundant with data already received via the Broadcast system.

Since weather data will be transmitted whenever the selected Coverage Area extends outside of CONUS, it is a good idea to be sure that your Coverage Area is selected appropriately.

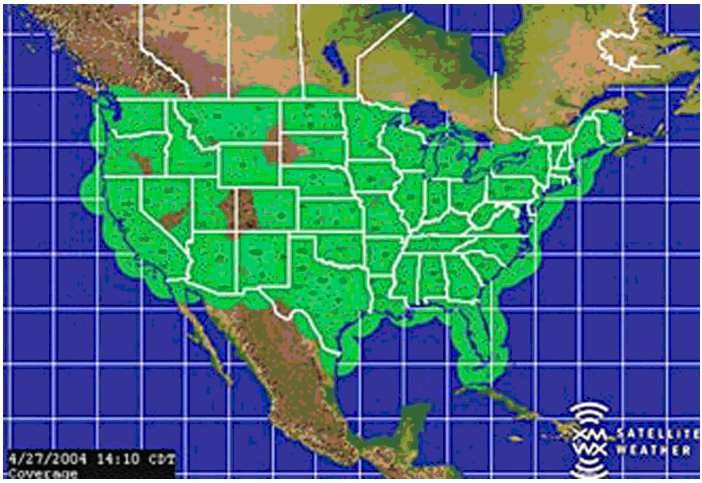


Figure 8.11 Example of NEXRAD Coverage Area

For example, consider a flight from Norfolk, VA to Frederick, MD. If the Coverage Area settings are “Flight Plan” and “400 nm” with all weather types selected, the Multilink system will attempt to send complete Narrowcast weather coverage for the route. The reason is that Frederick is only 396 nm from Montreal! In this case, the “400 nm” setting causes the NOC to determine that the flight extends outside of CONUS, and it initiates full weather service via Narrowcast. A better Coverage Area setting might be “Current Position” and “200 nm”. With these values, the NOC will not send Narrowcast weather data for this flight unless the Broadcast system fails.

8.8.6 Multilink Usage Guidelines

Use the following guidelines as a starting point. As you gain familiarity with the system, you can strike your own balance between Narrowcast usage and data availability:

- **Expanded Coverage**—If you regularly fly outside of CONUS and plan to use Multilink for expanded data coverage, consider setting the coverage area to “Flight Plan” and “200 NM.
- **Backup—**If you plan to use Multilink mainly as an active backup for Broadcast, consider setting the coverage area to “Current Position” and “200 nm” or even “100 nm” if you regularly fly in the northeastern United States. Remember that in the Boston area, for example, a setting of “200 nm” puts the Coverage Area outside of CONUS and will cause the NOC to send Narrowcast data for every flight.
- **Datalink Messaging & Flight Tracking Only—**If you plan to enable Multilink weather only when specifically needed and want to have Datalink Messaging and Flight Tracking available on all flights, you can de-select all weather types but leave Multilink enabled. This will cause the system to use a minimum of Narrowcast data on each flight for session management and position reporting.

8.9 Datalink Messaging (Optional)

For EX5000 MFDs that feature an internal satellite transceiver, the Multilink system provides the unique ability to send and receive simple text messages between the aircraft and the ground. Messages sent from the cockpit can be up to 30 characters in length, while messages sent from the ground can be approximately 200 characters in length. Transmission times will vary and may be as little as a minute or two, but in general messages will be delivered within approximately 20 minutes.

Due to the unpredictable nature of the speed of delivery, do not rely on Datalink Messaging for delivering critical messages.

Only use Datalink Messaging during low workload situations. Do not use Datalink Messaging in terminal or high traffic areas.

On the ground side, messages are sent and viewed via a password-protected web page. By logging in to your user account at www.myavidyne.com, you can create a password that allows people of your choice to exchange messages with your aircraft and track the progress of flights. You can share this password with any number of people, who may then simultaneously access your account. Please visit www.myavidyne.com for complete details.

On the EX5000, Datalink Messaging is accessed via the Datalink view of the Aux Page. If the Aux Page is set to the System view, press *Datalink* to change to the Datalink view.

Note: Avidyne cannot guarantee the privacy of your Datalink Messaging communications. For more information, see the Avidyne Privacy Policy.

8.9.1 Messaging Knobs and Buttons

The Datalink Messaging Page consists of a message display area, a text entry box and several buttons.

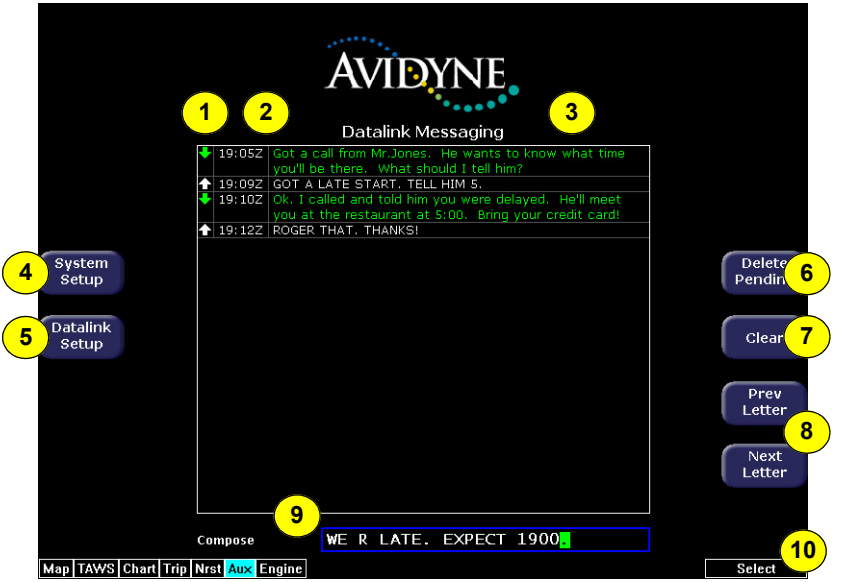


Figure 8.12 Datalink Messaging Knobs and Buttons

1) **Message Status Indicator**—Indicates the status of the message. These are the following possible states and arrows:

Table 8.1 Message Status Indicators

Indicator	Meaning	Description
	Successfully sent	A solid white arrow indicates a message that was successfully sent from the EX5000.
	Pending transmission	A hollow white arrow indicates a message entered on the EX5000 but still pending transmission.
	Message received from your MyAvidyne account.	A solid green arrow indicates a message received from a password holder via myavidyne.com.
	Message received from Avidyne NOC	A solid blue arrow indicates a message received from the Avidyne Network Operations Center.

2) **Message Timestamp**—The time stamp (Zulu) shows the *time of reception* for received messages, and the *time of entry* (queuing for transmission) for transmitted messages. Note that it may take as much as 20 minutes to transmit the message.

3) **Message Text**—The text of the message. Text color indicates the source of the message as follows:

Table 8.2 NOC Message Text Colors

Color	Description
Green	Messages received from the ground.
White	Messages entered into the EX5000 for transmission.
Blue	Messages received from Avidyne's Network Operations Center.

4) **System Setup**—Displays the Aux Main Page. The selected view (Datalink or System Setup) is retained when returning to the Aux Page from any other page.

5) **Datalink Setup**—Displays the Datalink Configuration Page which provides Multilink options. Allows you to enable or disable Multilink, and to select individual Narrowcast weather data types. For more information, see Section 7.6, "Datalink Configuration Page" on page 65.

6) **Send (or Delete Pending)**—When labeled *Send*, press to move the text to the message display area and queue it for transmission. When labeled *Delete Pending*, press to remove any message awaiting transmission from the queue and the display.

7) **Clear**—Press to clear the text in the Compose message box. The cursor moves to the first position in the box.

8) **Prev Letter/Next Letter**—Use these buttons to move to the next or previous letter in the message you are writing. To add a space, push *Next Letter* twice.

9) **Compose Text Box**—Displays the text of an outgoing message as it is being composed. Press Send to queue the message in the Compose box for transmission.

10) **Select (Select Character) Knob**—Use the right knob to select letters from the standard alphanumeric string set (A-Z, 0-9, and standard symbols). When the letter you want is displayed, press *Next Letter* to move to the next letter in the message.

Scroll Up / Scroll Down buttons—These buttons appear if the message display area is full and new messages are sent or received. Press either button to scroll the message display area up or down by one full message.

8.9.2 Using Datalink Messaging

Sending a Datalink Message

Sending a message consists of two steps: composing the message and then sending it.

➤ To compose a message on the EX5000:

1) Use the *Select* knob and the *Next Letter/Prev Letter* buttons, described in Section 8.9.1, "Messaging Knobs and Buttons" on page 92, to position the cursor in the text entry box.

2) Select letters and punctuation. If needed, press *Clear* to clear the text entry box and start over.

3) Once text has been entered in the text entry box, the *Send* button displays. Press *Send* when the outgoing message has been entered and is ready for transmission.

The text will then appear in the message display area, along with a hollow white arrow indicating that transmission is pending.

Additionally, the *Send* button changes to *Delete Pending*. Only press *Delete Pending* if you want to delete the pending message completely from both the transmission queue and the message display area.

Only one Datalink message may be pending for transmission at any time. If an outgoing message is pending, you can still enter text may for the next message, but the *Send* button will not be available until the pending message is either delivered or deleted.

Note: Messages sent from the ground to the airplane will be re-attempted for 24 hours. It is possible to miss a message that was sent after landing, for example, and receive it the next day.

Receiving a Datalink Message

When the EX5000 receives an incoming Datalink Message, a message pops up at the lower right corner of the screen. The message says “Incoming Mail:” followed by the first few words of the new message. Press the bottom right bezel button to acknowledge and dismiss this message display. Your current page selection does not change.

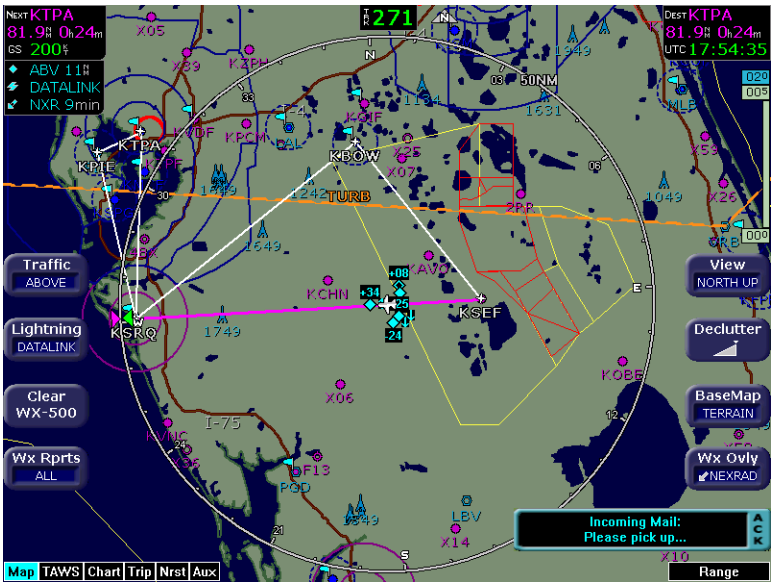


Figure 8.13 Receiving a Datalink Message

To view the new message, turn to the Aux Page and select the Datalink view if it is not already present. The full text of the new message displays in the message display area.

This page intentionally left blank.

9 Reference

This section contains the following information:

- *Updating Your Databases,* page 98
- *Broadcast Datalink Service Purchase and Activation,* page 103
- *Cleaning the EX5000 Screen,* page 107
- *Sensor Status Block Symbols,* page 108
- *Map Symbols,* page 110
- *Line Styles,* page 112
- *Data Blocks,* page 114
- *TAWS Messages,* page 116
- *Nav Messages,* page 118
- *Traffic Messages,* page 120
- *Lightning Messages,* page 122
- *PFD Messages,* page 125
- *Narrowcast Datalink Messages,* page 126
- *Broadcast Datalink Messages,* page 128
- *Avionics Abbreviations,* page 132

9.1 Updating Your Databases

Avidyne allows you to upload the following types of data to your EX5000:

- **NavData**—For the Map Page, Avidyne uses NavData from Jeppesen Sanderson, Inc. it is your duty as pilot in command to ensure that the data you fly with remains up to date.
- **CMax™ Chart Data**—An optional Avidyne feature that allows you to view JeppView chart data on your EX5000.

You can use a Zip Drive or USB Flash Memory Drive to move data between your PC and the EX5000. For more information about the databases, and about loading data from your PC to a Zip Drive or USB Flash Memory Drive, see the *Avidyne Data Update Guide*.

USB Flash Memory Drives come in many sizes and configurations. A sample USB Flash Memory Drive is shown below. For a list of approved USB Flash Memory Drives, see the Avidyne website at www.avidyne.com.

This section describes moving data from your Zip Drive or USB Flash Memory Drive to the EX5000.

If using a Zip Drive Dataloader:

- Allowing the portable Zip Drive to dangle by the cable can result in damage to your MFD, or the Drive, as well as a dataload failure.
- Do not insert the Zip disk into the Zip Drive until the regular start screen displays on the MFD. The disk may be damaged if it is already in the Zip Drive when power is applied.
- After loading the CMax data into your MFD, wait until the disk is ejected from the drive before unplugging the Drive, or powering off the MFD. Unplugging the Zip Drive with the disk still engaged may cause damage to the disk.

If using a USB Flash Memory:

- Avidyne strongly suggests that, to avoid confusion, you reserve a USB Flash Memory Drive solely for EX5000 database transfers.
- After uploading data, do not remove the USB Flash Memory Drive until you see and acknowledge the regular EX5000 Startup screen.

Note: When removing the rubber cap from the data port, pull the cap gently **from the top** until it pops out. Make sure the cap is all the way out before plugging anything into the USB port.

Do not tug on the tab at the bottom of the cap, this could separate the cap from the EX5000 bezel.

9.1.1 Loading NavData (the Navigation Database)

Your new EX5000 will be loaded with an up-to-date navigation database. Updates to the EX5000 NavData database are available from Jeppesen Sanderson, Inc. every 28 days and can be purchased either individually or on a subscription basis.

Once you have downloaded the Nav from your PC to either a Zip Disk Dataloader or USB Flash Memory Drive, as described in the *Avidyne Data Update Guide*, you will need to upload the data to your EX5000.

➤ To load NavData to your EX5000:

1) Bring either the Zip Drive and disk or the USB Flash Memory Drive to the EX5000 at the aircraft.

2) Turn power OFF to the EX5000.

3) Connect the data source to the EX5000:

- If using a USB Flash Memory Drive, plug it into the data port on the front of the EX5000.
- If using a Zip Drive Dataloader, put the Zip disk into the Zip Drive. Connect one end of the cable to the Zip Drive and the other end to the EX5000 data port.

> **Note:** Ensure that the Dataloader is supported and not dangling by the cable. Letting the Dataloader dangle can cause permanent damage to the data port. It can also cause an intermittent connection, which will result in an unsuccessful data update

4) Turn on the master switch to power up the EX5000. The Dataloader Page displays.

> **Note:** If the regular start screen displays, the EX5000 did not detect the Zip Drive. Check the connection between the Zip Drive and the EX5000, then restart the procedure.

5) Press *Proceed*. Do not turn off the EX5000 or disconnect the cable during a data load.The data load is complete when the regular startup Page is displayed.

6) At this point, turn off power to the EX5000, remove your USB Flash Memory Drive or Zip Drive, and then turn the EX5000 power back on. This step ensures that all data has been checked in self-test and the MFD is ready for use.

➥ This step ensures that all data has been checked in self-test and the MFD is ready to use.

7) Store the Zip Drive and cable or USB Flash Memory Drive in a safe place.

9.1.2 Loading CMax Chart Data

Once you have downloaded the CMax data from your PC to either a Zip Disk Dataloader or USB Flash Memory Drive, as described in the *Avidyne Data Update Guide*, you will need to upload the data to your EX5000.

➤ To load CMax Data to your EX5000:

1) With the MFD power OFF:

- If using a USB Flash Memory Drive, plug it into the data port on the front of the EX5000.
- If using a Zip Drive Dataloader, connect one end of the cable to the Zip Drive and the other end to the EX5000 data port Do not insert the Zip disk into the Zip Drive until after you turn on the MFD (in step 2).

> **Note:** Ensure that the Dataloader is supported and not dangling by the cable. Letting the Dataloader dangle can cause permanent damage to the data port. It can also cause an intermittent connection, which will result in an unsuccessful data update.

2) Turn on the MFD. If you are using a Zip Drive, insert the Zip disk into the Zip Drive when the initial Avidyne logo screen is displayed.

3) The Dataloader Page displays.

If this is the first-ever update, you may see a warning that you are about to load older data than the MFD already contains. This is because the preloaded demo charts expire in the year 2020, so the warning message is normal.

Press *Proceed* to start the chart data load.

4) The Dataloader Page shows the progress as it loads the data into the MFD. After loading the data, the Dataloader performs an integrity check on the data and displays a successful data load message if all data is valid.

5) When the operation is complete, the CMax Dataloader will restart the EX500.

6) At this point, turn off the power to the EX500, remove your USB FLash Memory Drive or Zip Drive, and then turn the EX500 power back on.

➥ This step ensures that all data has been checked in self-test and the MFD is ready to use.

7) Confirm the valid dates of the Chart data as reported on the Startup Screen.

8) Go to the Chart Page and select a chart from an airport known to be in your subscriptions coverage area. Confirm that the chart is available.

9) Store the Zip Drive and cable or USB Flash Memory Drive in a safe place.

9.2 Broadcast Datalink Service Purchase and Activation

To receive and display Broadcast Datalink weather and airspace, you must purchase service from XM WX Satellite Weather.

9.2.1 Setting Up a Broadcast Datalink Account

When you contact Sirius or XM Radio, they will request the following information:

- Your name
- The Weather Service Package that you want. They are available at one of the following sites:

  For WSI\Sirius, go to,

  www.wsi.com/aviation/products/inflight/

  For XM, go to,

  www.xmwxweather.com

  Choose the Satellite Weather service that you want based on the weather data products you would like to receive.
- Broadcast Receiver ID Number

  To obtain the ID of the Broadcast receiver installed in your aircraft, open the EX500 Trip Page. Press the *Display* button until "↓Status" (Broadcast Datalink status) is shown, and carefully record your Serial Number. (Note that XM Radio does not use "I" (eye), "O" (oh), "S" or "F".)
- Credit Card Information

9.2.2 Setting up a WSI Broadcast Datalink Account

If you have an MLB700 series Broadcast Datalink receiver installed, you must purchase service from www.myavidyne.com to activate the receiver. You will be required to provide the following:

- Your name
- The Weather Service Package you want. (The details are available at www.MyAvidyne.com.) Choose the Satellite Weather service you want based on the weather data products you would like to receive.
- EX500 unit serial number

- MLB700 series s/n. To obtain the s/n of the receiver installed in your aircraft, open the EX500 Trip Page. Press the *Display* button until “Status” (Broadcast Datalink status) appears. Carefully record your Serial Number.
- Aircraft make/model
- Aircraft tail number
- Credit Card Information

9.2.3 Activating WSI WX Satellite Weather

To verify that your receiver is activated, do the following:

1) Move your aircraft outside to an area with a clear view of the sky and power up both the EX500 and the Broadcast receiver.

2) When the activation code from Sirius is received, the EX500 will display information on the following EX500 pages:

- **Trip Page** - will display textual METARS and TAFS, Winds Aloft, Temperatures Aloft, and time elapsed since the last weather data was received.
- **Map Page** - will display NEXRAD data, AIRMETs/SIGMETs, TFRs, and graphical METARs
- **Nearest Page** - will display METARS

Note: If you are planning to enable MultiLink, leave the EX500 and Broadcast receiver powered on for at least an hour. This ensures that the Broadcast activation is recorded by the Avidyne Network Operations Center (NOC). If 24 hours pass before you can get to your aircraft, contact Avidyne to have another test signal sent to your aircraft.

Note: The EX500’s Service Level indication might take several flights to synchronize to the correct level, but you will still receive and see the weather products you have purchased.

9.2.4 Setting up a Sirius Audio Account

If you have an MLB700 series Broadcast Datalink receiver installed, and you have registered the product on www.myavidyne.com, you will need to contact Sirius at 1-888-539-7474 to activate it.

You will be required to provide the following:

- Your name
- The Audio Package you want (details available at www.sirius.com). Choose the Audio service you want based on the channels that you would like to receive.
- Audio s/n - please power up your Avidyne Remote Control and the s/n is located on the first screen.
- Credit Card Information

9.2.5 Activating Sirius Audio

To verify that your receiver is activated, do the following:

1) Move your aircraft outside to an area with a clear view of the sky and power up both the EX500 and the Broadcast receiver.

When your receiver receives the activation code, music can be heard through the pilot's audio panel.

9.2.6 Creating Your XM WX Account

To create your account, you will need to provide the following information.

- Your Name
- Weather Service Package
- Broadcast Receiver ID Number (to locate this read below)
- Credit Card Information

Select the weather service you want based on the weather data products you would like to receive. See www.xmradio.com/weather/aviation.html for information on product offerings and pricing. To obtain the ID of the Broadcast receiver installed in your aircraft, open the EX5000 Trip Page. Press the Display button until "↓Status" (Broadcast Datalink status) displays, and carefully record your XM Serial Number. (Note that serial numbers do not include the letters "I" (India), "O" (Oscar), "S" or "F".)

To place your order, contact XM Satellite Radio's Listener Care Center at 1-800-985-9200 and speak with an XM representative. Be prepared with all of the information above.

9.2.7 Activating Your Account

Your receiver is activated when XM sends a unique activation code to your receiver for 24 hours after your call. Your receiver will be enabled once it has received this code.

➤ To activate the XM WX Satellite Weather:

1) Move your aircraft outside and power on the EX5000 and receiver.

2) When your receiver receives the activation code the EX5000 begins to display weather data and indicates the XM weather service you purchased on the Broadcast Status section of the Trip Page (in the Service Level field).

Note: The EX5000's Service Level indication may take several flights to synchronize to the correct level but you will still receive and see the weather products you have purchased.

If 24 hours passes before you can get to your aircraft, contact XM Satellite Radio's Listener Care Center again or go to www.xmradio.com/refresh. Enter your XM WX ID number to enable the activation code for an additional 24 hours.

For problems relating to your receiver, contact Heads Up Technologies:

E-mail: service@heads-up.com
Phone: (972) 980-4890 Ext. 142.

9.3 Cleaning the EX5000 Screen

If your EX5000 screen should become dirty due to fingerprints or dust, clean the screen using the following materials and methods:

- A clean, soft lint free cloth such as 3M Ultra-Brite Cloth # 2011 or similar.
- A cleaning solution composed of de-ionized water or isopropyl alcohol (IPA).

Always apply the cleaning solution directly onto the cloth. **Never** spray cleaner directly onto the screen.

Note: Use caution when using IPA as it is flammable.

Using any other chemicals or materials voids the warranty.

The EX5000 screen is made of a plastic film that is vulnerable to scratches, damage by a sharp articles or improper cleaners. Use care when cleaning.

9.4 Sensor Status Block Symbols

Table 9.1 Sensor Status Block Symbols

Symbol	Type	Status
	Traffic	A solid cyan symbol indicates that the sensor system is reporting a healthy status and is being displayed in the mode listed in the sensor status block.
	Lightning	
	Traffic	A hollow cyan symbol indicates that the function is reporting a healthy status, but is turned off for display on the Map Page.
	Lightning	
	Traffic	A solid yellow symbol indicates that the EX5000 is unable to display data from that particular sensor. This may be due to a communication error, the sensor is not healthy, or there is a configuration problem.
	Lightning	
	Traffic	A hollow yellow symbol indicates that the function is not able to display data due to the same reasons as above, and is turned off from display on the Map Page.
	Lightning	

Table 9.2 Broadcast Datalink Sensor Status Block (Optional)

Symbol	Status
	A solid cyan arrow indicates that NEXRAD imagery is currently displaying on the Map Page, but the Broadcast signal is Marginal, Weak, or None.
	An animated black and cyan arrow indicates that NEXRAD imagery is turned off for display on the Map page, but the NEXRAD data is valid and the broadcast signal quality is Good.
	An animated cyan arrow indicates that NEXRAD imagery is currently displaying on the Map Page. The broadcast signal quality is Good.
	An empty (hollow) arrow indicates that NEXRAD imagery is turned off for display on the Map Page and the broadcast signal quality is Marginal, Weak, or None.
	A solid yellow arrow indicates that NEXRAD imagery is selected for display, but is not shown because the NEXRAD data is invalid. The broadcast signal quality is Marginal, Weak, or None.
	An animated black and yellow arrow indicates that NEXRAD imagery is turned off for display on the Map Page and the NEXRAD data is invalid. The broadcast signal quality is Marginal, Weak, or None.
	An animated yellow arrow indicates that NEXRAD imagery is selected for display, but it is not shown because the NEXRAD data is invalid. The broadcast signal quality is Good.

9.5 Map Symbols

The EX5000's Map uses symbols contained in its navigational database, based on your navigational mode and flight situation. Map can display the following database items:

- Airports
- Navaids (VORs, NDBs and Waypoints)
- Airways (Victor and jet)
- Intersections, waypoints and other named fixes
- Class B and Class C controlled airspace
- Tower Zone Airspace
- Obstacles (>200' AGL)
- Certain classes of special use airspace (Prohibited, Restricted, Warning, Alert and Military Operating Areas)

Navigational symbols used by Map are shown in this section.

Table 9.3 Map Symbols – Airports

Airport Type	Surface		
	Hard	Soft	Water
Towered			
Towered			
Non-Towered			
Non-Towered			

Notes:

- The larger airport symbols are displayed as the map scales are reduced to the smaller ranges.
- Airport types are derived directly from the Jeppesen navigation database.

Table 9.4 Map Symbols – Navigational Fixes

Symbol	Item	Description
	NDB	All NDBs
	VOR	All VORs
	Intersection	Terminal, Jet, and Victor airway waypoints (intersections)

Table 9.5 Map Symbols – Traffic Symbols

Non-TAS Symbol	TIS Symbol	Type	Meaning
		Traffic Alert (TA)	Traffic within the alert zone defined by the traffic sensor.
		Proximate Traffic	Traffic close to your position but not within an alert zone.
		Other Traffic	Traffic detected by the traffic sensor, but determined not to be a current threat.

Table 9.6 Map Symbols – Other

Symbol	Item	Symbol	Item
	Flight Plan (active leg)		Single Low Obstacle >= 200° AGL < 1000° AGL
	Flight Plan (inactive leg)		Low Obstacles within 1NM of each other >= 200° AGL < 1000° AGL
	Map Orientation		Single Obstacle >= 1000° AGL
	Ownship Symbol		Obstacles within 1NM of each other >= 1000° AGL
	Flight Plan, Course Waypoints		Interstate Highway

9.6 Line Styles

Table 9.7 Airspace and Airways Lines

Item	Color	Line	Label
Class B	Blue		Elevation
Class C	Magenta		Elevation
Tower Zone Airspace	Dashed Blue		None
Victor Airways	Blue grey		ID Label
Jet Airways	Blue grey		ID Label

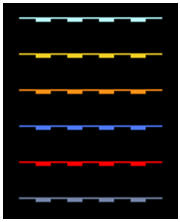
Note: When Narrowcast or Multilink is active, the SUA status displays as shown in Table 9.8. If Narrowcast is not in use, all SUA statusdisplays as Unknown, except for TFRs that are received via Broadcast Datalink. In this case, the TFRs display as Active.

Table 9.8 SUA and TFR Status Lines

Region Type	Status							
	Inactive		Unknown		Pending		Active	
	Line	Label	Line	Label	Line	Label	Line	Label
Prohibited, Restricted	Dashed	Inact	Single	Unk	Single	Pend	Triple	Act
Warning, Alert, MOA	Dashed	Inact	Single	Unk	Single	Pend	Triple	Act
TFR	Dashed	N/A	N/A	N/A	Single	N/A	Triple	N/A
			N/A					

Note: For adjacent or overlaying types of Special Use Airspace (e.g. Restricted Areas or Prohibited Areas within larger MOAs), some masking of the border lines may occur. See current aeronautical charts for accurate boundaries.

Table 9.9 AIRMET and SIGMET Boundary Lines

Line Color		Type	Label
	Bright blue	Mountain AIRMET	MTN
	Dark yellow	IFR AIRMET	IFR
	Orange	Turbulence AIRMET	TURB
	Blue	Icing AIRMET	ICE
	Dark Red	SIGMET AIRMET	SIG
	Blue grey	Convective SIGMET	CSIG

9.7 Data Blocks

Table 9.10 Data Block Information

Name	Description	Range
TO WPT	Name of, bearing and distance to the “To” waypoint in the active flight plan. The bearing is from your present position directly to the fix. If you are off course, it will differ from your planned course. Distance is measured direct. Also displays ETE (Estimated Time En route). **Note**: For parallel track, there is no waypoint label. All other data is displayed only if supplied by GPS.	5 characters (Name) 1 to 360 degrees 0.0 unlimited NM. HH:MM:SS
NEXT WPT	Name of, bearing and distance to the “To” waypoint in the active flight plan. Also displays ETE (Estimated Time En route). **Note**: For parallel track, all data is removed.	5 characters (Name) 1 to 360 degrees 0.0 unlimited NM. HH:MM:SS
DEST WPT	Name of and distance to the final destination waypoint in system distance units. Distance is measured along planned route. **Note**: For parallel track, all data is removed.	5 characters 0.0 unlimited NM
NRST ARPT	Identifier of, bearing and distance to the nearest airport.	5 characters (Name)
LAT/LON	Current latitude and longitude in degrees and decimal minutes.	N/S 0 to 90o 0’ E/W 0 to 180o 0’
BARO ALT	Barometric Altitude.	Based on data from FMS (if available) or GPS (see Note)
GND SPD	Current ground speed in system speed units.	0.0 to 999.9 knots
TRUE AIRSPD	True Airspeed (TAS not available from most panel-mounted GPS systems).	From FMS
UTC TIME	UTC (Greenwich or “Zulu”) time.	0 to 23h 59m 59s
LOCAL TIME	Local data and time. Derived from UTC time with time zone setting applied.	0 to 23h 59m 59s
Blank	Blank space	

Note: The Baro Altitude may be received from the FMS or GPS (via 429). The FMS/GPS calculates the altitude based on the barometric pressure entered into the FMS by the pilot. This display verifies what has been put into the FMS/GPS. Do not rely on this display for terrain separation.

9.8 TAWS Messages

Table 9.11 TAWS Messages

TAWS Messages & Colors		Meaning	Recommended Pilot Action
Caution Obstacle		EGPWS Obstacle caution.	Fly to avoid obstacle.
Caution Terrain		EGPWS Terrain caution.	Fly to avoid terrain.
OBSTACLE AHEAD, PULL UP		EGPWS Obstacle Warning.	Pull up to avoid obstacle.
TERRAIN AHEAD, PULL UP		EGPWS Obstacle Warning.	Pull up to avoid terrain.
TAWS Display Initializing		During its startup phase, this Message displays. While TAWS display is initializing, the TAWS Page is painted with magenta dots overlaid by the large text annunciation TAWS DISPLAY INITIALIZING.	The message should clear spontaneously. If the test fails or does not terminate refer to the EGPWS pilot's guide.
TAWS Sensor Self Test		The EGPWS is performing a Self-Test. A distinctive color test pattern will be displayed. The large text annunciation, "TAWS SENSOR SELF-TEST" is presented over the test pattern. The text will remain until the self-test is finished.	If the test fails or does not terminate refer to the EGPWS pilot's guide.

Table 9.11 TAWS Messages (Continued)

TAWS Messages & Colors		Meaning	Recommended Pilot Action
TAWS Display Inhibited		When you inhibit EGPWS alerts by means of the separate EGPWS control panel, the TAWS Display Page is painted with magenta dots overlaid by the large text annunciation TAWS DISPLAY INHIBITED.	Check to see if the control settings are correct. If the EGPWS is not inhibited and if this message persists, contact an Avidyne Entegra Authorized Service Center.
TAWS Display Unavailable		The EGPWS is unable to supply the EX5000 with a reliable TAWS display, probably because one if its inputs from another device in the aircraft is incorrect or unreliable. When the TAWS Display is unavailable due to this condition, the TAWS Display Page is painted with magenta dots overlaid by the large text annunciation TAWS DISPLAY UNAVAILABLE.	Check to see that EGPWS is powered up. Have an Avidyne Entegra Authorized Service Center check configuration and installation.
TAWS Not Communicating		Indicates that the EGPWS sensor is powered down or incorrectly attached to the EX5000. Whenever the TAWS Display is unavailable due to this failure, the TAWS Display Page is painted with magenta dots overlaid by the large text annunciation TAWS NOT COMMUNICATING.	Check to see that EGPWS is powered up. Have an Avidyne Entegra Authorized Service Center check configuration and installation.

9.9 Nav Messages

Table 9.12 Nav Messages

NAV Messages and Colors		Meaning	Recommended Pilot Action
Nav Source Data is valid		GPS/FMS indicates that the computed position data is valid.	Acknowledge.
Nav Source Data is NOT valid (err=x)		Your GPS/FMS has not computed a valid position or is not supplying valid data. Flight Plan will not be presented on the Radar display.	Check GPS for valid position. Have an Avidyne Entegra Authorized Service Center check GPS/ FMS and installation
Nav Source: Can't Open Port		The GPS/FMS interface cannot open the assigned port. Generally indicates a configuration error.	Have an Avidyne Entegra Authorized Service Center check configuration and installation
Nav Source Reconnecting…		EX5000 is attempting to reconnect to the port that is connected to the GPS/FMS.	Acknowledge.
Nav Source is Not Communicating		EX5000 does not detect any data being sent from the GPS/FMS.	Have an Avidyne Entegra Authorized Service Center check configuration and installation
Nav Source Data Format Error		Invalid data is coming from your GPS/FMS. If persistent, generally indicates a configuration error.	Have an Avidyne Entegra Authorized Service Center check configuration and installation

Table 9.12 Nav Messages (Continued)

NAV Messages and Colors		Meaning	Recommended Pilot Action
Heading Data is NOT Valid		GPS/FMS is configured as the Map heading source and that data ceases to be available or becomes invalid.	Have an Avidyne Entegra Authorized Service Center check configuration and installation
Heading Data is Valid		GPS navigator is configured as the Map heading source and that data becomes valid following an acknowledgement of an invalid message.	Acknowledge.
Parallel Track Active		430W is operating in parallel track mode. Certain flight plan information will not be available.	Acknowledge

9.10 Traffic Messages

Table 9.13 Traffic Messages

Traffic Messages & Colors	Meaning	Recommended Pilot Action
Traffic Sensor is Operating Normally	Traffic sensor is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge.
Traffic <Bearing> / <Distance > / <Relative Altitude>	Traffic Advisory	Acknowledge to go to Dedicated Traffic Page and begin looking for traffic.
Traffic <Distance> / <Relative Altitude>	Traffic Advisories with no bearing information.	Acknowledge to go to Dedicated Traffic Page to look for traffic.
Traffic <Bearing> / <Distance>	Traffic Advisories with no relative altitude information.	Acknowledge to go to Dedicated Traffic Page to look for traffic.
Traffic <Distance>	Traffic Advisories with no bearing and no relative altitude information.	Acknowledge to go to Dedicated Traffic Page and begin looking for traffic.
Traffic Sensor is in Stand- By	EX5000 receives a “Stand-By” transmission from the traffic sensor. Press “Traffic” button to select a traffic mode.	Have an Avidyne Entegra Authorized Service Center check configuration and installation if message persists.
Traffic Sensor is in Self-Test	Traffic sensor is in self-test mode.	Acknowledge.
Traffic Sensor is Not Communicating	Traffic sensor is not transmitting data.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.

Table 9.13 Traffic Messages (Continued)

Traffic Messages & Colors	Meaning	Recommended Pilot Action
TCAD Altitude Unavailable	TCAD sensor is not receiving altitude information.	Have an Avidyne Entegra Authorized Service Center check configuration and installation
Traffic Heading Source Failed	TAS/ TCAS is configured as the Map Heading source and a “fatal heading fault” is received.	Have an Avidyne Entegra Authorized Service Center check configuration and installation
Traffic Heading Source is Valid	Traffic sensor is configured as the Map Heading source and is valid.	Acknowledge.

9.11 Lightning Messages

Table 9.14 Lightning Messages

Lightning Messages & Colors	Meaning	Recommended Pilot Action
Lightning Sensor is Operating Normally	Lightning source is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge.
Lightning Sensor is in Noise- Monitor Mode	Lightning source is in Noise- Monitor Mode.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Sensor is in Demo Mode	Lightning source is in Demo Mode.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Sensor is in Test Mode	Lightning sensor in a self-test mode.	Acknowledge.
Lightning Sensor ERROR	EX5000 receives a “recoverable fault” notification.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Sensor has FAILED	EX5000 receives a “fatal fault” notification.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Sensor is Not Communicating	EX5000 receiving no data from the lightning sensor.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Ahead **(WX-500 only)**	Stormscope is indicating discharge activity horizontally within ± 22 ° of the aircraft nose and within 75nm.	Determine location of lightning and avoid.

Table 9.14 Lightning Messages (Continued)

Lightning Messages & Colors		Meaning	Recommended Pilot Action
Lightning Heading Source Failed		Stormscope is configured as a heading source and a “fatal heading fault” is received.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Heading Source OK		Stormscope is configured with heading input.	Acknowledge.
Lightning Antenna Location Changed **(WX-500 only)**		Stormscope antenna location disagrees with EX5000 setting.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Position Source Failed **(TWX-670 only)**		The position reporting source (GPS or FMS) connected to the TWX-670 has encountered a fatal fault.	Have configuration checked at an Avidyne Authorized Entegra Service Center.
Lightning Position Source OK **(TWX-670 only)**		The position reporting source (GPS or FMS) connected to the TWX-670 has returned to normal operation.	Acknowledge.

Table 9.14 Lightning Messages (Continued)

Lightning Messages & Colors	Meaning	Recommended Pilot Action
Noise Present **(TWX-670 only)**	The TWX-670 has detected excessive noise in the system. Accuracy and efficiency of the lightning sensor may be negatively affected.	Have configuration check at an Avidyne Authorized Entegra Service Center.
Stuck MK **(TWX-670 only)**	Microphone PTT switch is stuck open. Lightning strikes will not be displayed until the problem is fixed.	Check the aircraft PTT switches. If the problem persists, have the aircraft checked at an Avidyne Authorized Entegra Service Center
No Position Data **(TWX-670 only)**	The position reporting source (GPS or FMS) connected to the TWX-670 is not sending position data.	Cycle position sensor power. Have configuration checked at an Avidyne Authorized Entegra Service Center.

9.12 PFD Messages

Table 9.15 PFD Messages

PFD Messages & Colors	Meaning	Recommended Pilot Action
PFD is Operating Normally	PFD is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge.
PFD is Not Communicating	MFD is receiving no data from PFD	Have an Avidyne Entegra Authorized Service Center check configuration and installation.

9.13 Narrowcast Datalink Messages

Note: MFD status messages that refer to “Narrowcast” are in reference to the internal datalink transceiver, while MFD status messages that refer to “Broadcast” refer to the external XM receiver. Additionally, MFD messages that refer to “Datalink” also refer to Narrowcast Datalink.

Table 9.16 Narrowcast Datalink Messages

Datalink Messages & Colors		Meaning	Recommended Pilot Action
Datalink Sensor is Operating Normally		Satellite communicator is operating normally after a recoverable fault was previously acknowledged.	Acknowledge.
Datalink Sensor is NOT Communicating		Satellite communicator has stopped communicating.	Restart system. If problem persists, contact Avidyne.
Datalink Sensor Configuration Error		COMM port is configured incorrectly.	Restart system. If problem persists, contact Avidyne.
Datalink Sensor Data is Invalid		EX5000 receives a “recoverable fault” notification.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Narrowcast METAR symbols > 90 minutes		METARs are older than 90 minutes from their time of reception.	Acknowledge.
Narrowcast AIRMETs/ SIGMETs > 90 minutes		AIRMETs/ SIGMETs are older than 90 minutes.	Acknowledge.
Narrowcast SUA Status > 90 minutes		SUA Status data are older than 90 minutes.	Acknowledge.
Narrowcast TFRs > 90 minutes		TFR data are older than 90 minutes.	Acknowledge.
Narrowcast Data not yet received		Datalink is Enabled and no Datalink data has been received within 10 minutes of EX5000 initialization complete.	Acknowledge.

Table 9.16 Narrowcast Datalink Messages (Continued)

Datalink Messages & Colors		Meaning	Recommended Pilot Action
Narrowcast Airmets/ Sigmets not yet received		AIRMETs/ SIGMETs are selected and they are not received within 15 minutes of the initial Datalink update.	Acknowledge.
Narrowcast SUA Status not yet received		SUA Status/ TFRs are selected and SUA Status is not received within 15 minutes of the initial Datalink update.	Acknowledge.
Narrowcast TFRs not yet received		UA Status/ TFRs are selected and TFRs are not received within 15 minutes of the initial Datalink update.	Acknowledge.
Narrowcast METARs Symbols not yet received		METARs are selected and they are not received within 15 minutes of the initial Datalink update.	Acknowledge.
Datalink: Idle		No data being sent or received.	None necessary.
NXR Invalid		NEXRAD temporarily not able to be displayed.	Wait for next NEXRAD update.

9.14 Broadcast Datalink Messages

Table 9.17 Broadcast Datalink Messages

Datalink Messages & Colors	Meaning	Recommended Pilot Action
Broadcast Receiver Not Communicating	EX5000 has received no data from the broadcast receiver for 10 minutes	Have the wiring from the broadcast receiver to the EX5000 inspected.
Broadcast Antenna is Disconnected	The Broadcast Datalink antenna or cable is not properly connected to the receiver.	Have the Broadcast antenna connection inspected.
Broadcast Receiver is Operating Normally	The Broadcast receiver is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge.
Broadcast Data not yet received	The EX5000 did not receive Broadcast weather data within the first 10 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast NEXRAD not yet received	The EX5000 did not receive NEXRAD data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast METARs not yet received	The EX5000 did not receive METAR data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Storm Cells not yet received	The EX5000 did not receive Storm Cell data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Winds Aloft not yet received	The EX5000 did not receive Winds Aloft data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

Table 9.17 Broadcast Datalink Messages (Continued)

Datalink Messages & Colors		Meaning	Recommended Pilot Action
Broadcast TAFs not yet received		The EX5000 did not receive TAF data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Freezing Level not yet received **(XM only)**		The EX5000 did not receive Freezing Level data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Temps Aloft not yet received **(WSI only)**		The EX5000 did not receiveTemps Aloft data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast AIRMETs not yet received		The EX5000 did not receive AIRMET data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast SIGMETs not yet received		The EX5000 did not receive SIGMET data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast TFRs not yet received		The EX5000 did not receive TFR data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Lightning not yet received		The EX5000 did not receive Lightning data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

Table 9.17 Broadcast Datalink Messages (Continued)

Datalink Messages & Colors		Meaning	Recommended Pilot Action
Broadcast NEXRAD > 120 min		Broadcast NEXRAD data age since creation is greater than 120 minutes. NEXRAD data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast METARs > 90 min		Broadcast METAR data age since creation is greater than 90 minutes. METAR data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast AIRMETs > 90 min		Broadcast AIRMET data age since creation is greater than 90 minutes. AIRMET data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast SIGMETs > 90 min		Broadcast SIGMET data age since creation is greater than 90 minutes. SIGMET data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast TFRs > 90 min		Broadcast TFR data age since creation is greater than 90 minutes. TFR data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Storm Cells > 20 min		Broadcast Storm Cell data age since creation is greater than 20 minutes. Storm Cells will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Winds Aloft > 90 min		Broadcast Winds data age since creation is greater than 90 minutes. Winds data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

Table 9.17 Broadcast Datalink Messages (Continued)

Datalink Messages & Colors		Meaning	Recommended Pilot Action
Broadcast TAFs > 90 min		Broadcast TAF data age since creation is greater than 90 minutes. TAFs will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Freezing Level > 90 min **(XM only)**		Broadcast Freezing Level data age since creation is greater than 90 minutes. Freezing Level data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Temps Aloft > 90 min **(WSI Only)**		Broadcast Temps Aloft data age since creation is greater than 90 minutes. Freezing Level data will not be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

9.15 Avionics Abbreviations

The following avionics abbreviations are used in this manual:

Table 9.18 Avionics Abbreviations

Abbreviation	Meaning
AGL	Above Ground Level
AIM	Aeronautical Information Manual
AIRMET	AIRman's METeorological advisory
CDI	Course Deviation Indicator
CONUS	Continental United States
EGPWS	Enhanced Ground Proximity Warning System
GPS	Global Positioning System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
METAR	Meteorological Aerodrome Report
MFD	Multi-Function Display
MSL	Mean Sea Level
NDB	Non-Directional Beacon
NEXRAD	Next Generation Radar. A network of advanced Doppler radars that operates throughout the US.
NM	Nautical Mile
NOTAM	NOTices to AirMen - Important information provided by the FAA or similar international organizations.
NOWrad	Product name for WSI pilot weather product. Uses the NEXRAD Doppler radars (defined above).
PFD	Primary Flight Display
SIGMET	SIGnificant METeorological advisory
SUA	Special Use Airspace
TA	Traffic Advisory
TACAN	Tactical Air Navigation
TAF	Terminal Aerodrome Forecasts
TAS	Traffic Advisory System
TAS	True Air Speed
TAWS	Terrain Awareness and Warning System
TCAD	Traffic and Collision Alert Device
TCAS	Traffic Alert Collision Avoidance System

Table 9.18 Avionics Abbreviations (Continued)

Abbreviation	Meaning
TFR	Temporary Flight Restrictions
UTC	Universal Coordinated Time (Zulu) (Greenwich Mean Time)
VFR	Visual Flight Rules
VOR	VHF Omnidirectional Radio Beacon
WX	Weather

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10 Using the EX5000 Outside the US

When flying outside the United States, certain features of the Entegra EX5000 will not be available or will only be available under some circumstances. This section describes these differences.

NOTAM information is subject to constant change. It is **extremely important** that you check with your local flight service or other official flight advisory service for applicable NOTAMs before EVERY flight.

10.1 Features Available in the US Only

The following features are generally not available on the Entegra EX5000 when flying outside the United States.

- **Obstacle Display**—The obstacle database is valid only for the United States.
- **TIS Traffic**—TIS Traffic is only available in the US where Mode-S radar service is available. For more information about TIS sensors, see Section 1-3-5 of the Aeronautical Information Manual.
- **XM WX Weather**—XM WX Satellite Weather (Broadcast Datalink), and therefore, the EX5000 Datalink features, are not currently available outside CONUS.
- **WSI\Sirius Weather**—WSI\Sirius Satellite Weather (Broadcast Datalink), and therefore the EX5000 Datalink features, are not currently available outside CONUS.
- **Narrowcast Weather**—While Narrowcast weather can be received worldwide, Avidyne only provides data for North America (including the United States and Canada).
- **Multilink**—Because Broadcast Datalink and Narrowcast Datalink are not fully supported outside the United States, Multilink is unavailable.
- **TFR and SUA Status**—Temporary Flight Restrictions and Special Use Airspace are displayed only within the United States when Narrowcast is in use.

10.2 Features Specific to International Flight

- **CMax Chart Data**—Terminal procedure chart availability is determined by your CMax chart subscription coverage. For questions regarding your coverage area, contact Jeppesen at www.jeppesen.com, or by phone (for western hemisphere, including South America, call +1-303-799-9090, for eastern hemisphere, including Europe, call +49 6102 5070).
- **Terrain Data**—Avidyne provides terrain data for two areas: the Americas, and International (everything else). If you are flying in an area where your current terrain data is not supported, terrain will not display (similar to the Base view on the Map Page).

  When purchasing an EX5000, you can specify which terrain data you want on your MFD. An International Conversion Utility is available from Avidyne that changes the MFD terrain data between Americas and International. The utility can be installed in the field at an Avidyne Authorized Entegra Service Center. For information about the International Conversion Utility contact Avidyne Technical Support.

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